PROJECTIONIST

INTERNATIONA

AUGUST 1952

VOLUME 27 • NUMBER 8

30c A COPY • $2.50 A YEAR

ALONGSIDE THESE LAMPS STAND THE WORLD'S FINEST PROJECTIONISTS

Peerless MAGNARC

TRADE MARK REG.

1-KW TO 70 AMPS

"HY-AX" ARC MAGNET

"HY-LUMEN" REFLECTOR

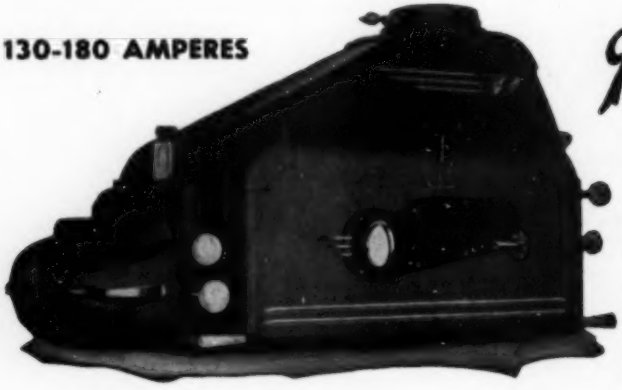
More light at 40 to 70 amperes than ever thought possible. . . . Equals and excels any reflector lamp to 85 amperes, whether they be unapproved water-cooled or resurrected "Hi-Lows". . . . Highest ratio of honest screen lumens per arc watt. . . . At 70 amperes, using an accurated Glass Hy-Lumen Reflector*, with a projector having an efficient revolving shutter, it develops the maximum screen brilliance that can be used without a heat filter at no risk of film damage. . . . Operating costs under these conditions are far below that of 85-ampere lamps.

Magnarc Lamps assure 80% side-to-center (SMPE Standard) screen light distribution, not a deceptive 60% or "Hot Center". . . . They are all Und. Lab., Inc. listed. . . . They are not insurance hazards. . . . They are and have been for years "The First Choice" of large and small theatres, drive-ins, and the motion picture industry.

* Similar results are not guaranteed if all-metal reflectors are used.

"FIRST WITH THE FINEST"

130-180 AMPERES



Peerless HY-CANDESCENT

TRADE MARK REG.

NEW MAGNETIC STABILIZER

This modern lamp produces all the light there is . . . It is the standard equipment of the nation's largest and finest theatres. . . . Used by 90% of the largest Drive-In Theatres.

It is the "Omega" for maximum screen brilliance. . . . Nothing can even approach it in white light volume when used with projectors that have efficient revolving shutters.

Assures satisfying projection for Drive-Ins regardless of the size of the picture, length of throw, and under all weather conditions. . . . They are Und. Lab., Inc. listed and, therefore, not insurance hazards. . . . Heat filter assures no risk of film-heat damage at maximum arc amperage and maximum screen lumens.

"WHY EXPERIMENT?"

J. E. McAULEY MFG. CO.

552-554 WEST ADAMS STREET

CHICAGO 6, ILLINOIS

INTERNATIONAL PROJECTIONIST

With Which Is Combined PROJECTION ENGINEERING

AARON NADELL, *Editor*

Volume 27 AUGUST 1952 *Number* 8

Index and Monthly Chat 3

41st IA Convention: Theatre Industry Asks Labor for Help .. 5

Outstanding Acts of the Convention 6

Heart of the Projector 8
ROBERT A. MITCHELL

Parallax Barriers in Stereoscopy and Tv 12

Standards Promote Better Projection 14

Telecasts 15

In the Spotlight 16

The American Labor Movement 17

New Twin Screen Drive-in Has Duplex Projection Room 18

16-mm Audio-Visual Show Draws Thousands 19

High Speed Movie Technique "Magnifies Time" 20

Eastman Kodak's 25 and Pageant 16-mm Projectors 21

Accepted Standards for 16-mm Projection 24

Letters to the Editor 25

TESMA Show Bookings Boom .. 25

Bausch & Lomb Welcomes Inventive Ideas 29

IA-IP Ham Radio Bulletins 29

News Notes

Technical Hints

Miscellaneous Items

Published Monthly by

INTERNATIONAL PROJECTIONIST PUBLISHING CO., INC.

19 West 44 Street, New York 36, N. Y.

Telephone: MUrray Hill 2-2948

R. A. ENTRACHT, Publisher

SUBSCRIPTION REPRESENTATIVES

AUSTRALIA: McGills, 183 Elizabeth St., Melbourne

NEW ZEALAND: Te Aro Book Depot, Ltd., 64 Courtenay Place, Wellington

ENGLAND and ELSEWHERE: Wm. Dawson & Sons, Ltd., Macklin St., London, W. C. 2

YEARLY SUBSCRIPTION: United States and possessions, $2.50 (two years, $4); Canada and foreign countries, $3; single copies, 30 cents. Changes of address should be submitted two weeks in advance of publication date to insure receipt of current issue. Entered as second class matter February 8, 1932, at the Post Office at New York, N. Y., under the act of March 3, 1879.

Entire contents copyrighted 1952 by INTERNATIONAL PROJECTIONIST Publishing Co., Inc. INTERNATIONAL PROJECTIONIST assumes no responsibility for personal opinions appearing in signed articles in its columns, or for unsolicited communications.

MONTHLY CHAT

IN A move to promote economy MGM studios announced a cut in pay—*not* of craftsmen or white collar workers, but of top executives in Hollywood, New York, and overseas whose salaries are $1,000 per week or more.

This corner commented eight months ago (December, 1951): "What to do? Why, just take some of these terrifically inflated star (?) and executive (?) salaries, plus other monetary folerol, and plough it back into the erection of a solid technological foundation . . ."

Whether MGM will use the funds garnered by this salary-cut for technological progress or not remains to be seen, but at least a step has been taken. And it is a new step—not the time-dishonored one of squeezing the hides of the lowest-paid hired help. This is something different.

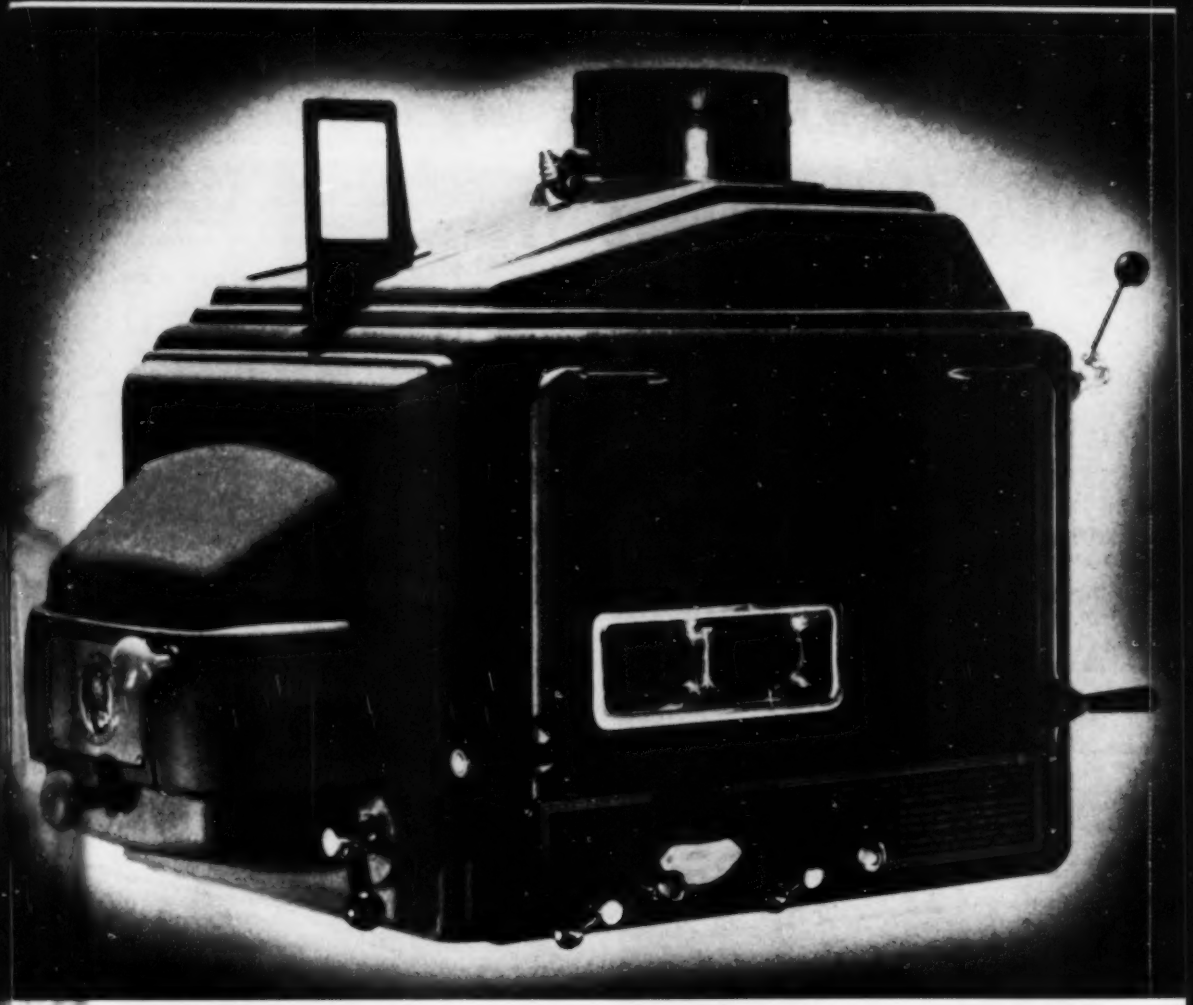
* * *

Sylvia F. Porter, widely-known writer on economics whose reflections appear daily in the *New York Post*, commented July 23 on another trend of our industry in that paper: ". . . The industry is changing, shifting away from the 'B' products toward more spectacles and more mature pictures." This is also something different. Yet logical. "B" pictures always were more a means of killing time than of rousing and gratifying the dramatic emotions. The "movies" were the poor man's (and woman's) time-killer in addition to and aside from constituting a dramatic vehicle. Now that Tv offers a time-killer even less expensive than the cheapest admission—absolutely free, in fact—the motion picture industry finds itself changing (if Miss Porter is right) to a more important, more dignified status in the national life—and to an industry in which pay cuts, when needed, are directed against those who can afford them, not those who can't.

Nor does the industry diminish in size by these changes. Miss Porter in the same column makes the point (which IP also made just one month ago—page 29) that actually there is more seating capacity in this industry today than ever before. Earnings are down, yes. But Miss Porter also points out that the earnings of the five leading film producers were down, in 1951, only 5 per cent below the 1950 level; while earnings of 808 leading industrial corporations averaged a drop of 12.3 per cent in 1951.

* * *

So a picture seems to emerge of a somewhat changed industry, having somewhat improved labor policies, having a stronger financial position than 808 leading industrial corporations, and occupying a more dignified and less chintzy position in the community. Some theatres have closed, but new ones have opened. It stands to reason, and common observation confirms, that the houses that closed were mostly ill-maintained, run-down liabilities to all of us—no great loss. The new theatres and drive-ins provide equivalent employment.



MODERNIZE YOUR SCREEN LIGHTING

HAVE THE BRIGHTEST BIG-SCREEN PICTURES AT LOWEST COST

NATIONAL EXCELITE

75 to 130 ampere high intensity reflector type

PROJECTION ARC LAMP

Automatic arc crater positioning.
Air-cooled rotating positive carbon feeding mechanism.
Big 16½" reflector matches high speed f/1.9 lens.

DISTRIBUTED BY NATIONAL THEATRE SUPPLY

THERE'S A BRANCH NEAR YOU

VOLUME XXVII AUGUST 1952 NUMBER 8

41st IA Convention

Theatre Industry Asks Labor for Help

IATSE Convention Hears Repeated Appeals from Industry Leaders for Help in Promoting Public Good Will and Attendance, in Reducing the Federal Admission Tax, and Improving General Efficiency of all Operation.

SOS from management to labor sums up the most spectacular and remarkable feature of the IATSE's 41st Convention at Minneapolis, August 4th to 8th.

A goodly portion of the first three days of the five-day gathering was occupied by such appeals, which were voiced by Eric Johnston, President of the Motion Picture Association of America; by Major Leslie E. Thompson of RKO, and other exhibitor representatives. Gist of the appeals were that the industry is sick—not desperately, it was stressed, but seriously—and that labor is a partner and has a stake in the well-being of the industry.

In spite of the industry's troubles any possibility of wage-cutting or lengthening of hours in these times of rising prices were disclaimed as absurd by all the industry spokesmen who addressed the gathering; it was pointed out, however, that theatres are closing and more may close and that labor, specifically the IATSE, can help keep them open. IA members can do this, the Convention was told, by spreading the gospel that the theater is the place to go for good entertainment; by praising pictures when they deserve praise; by joining with COMPO (Council of Motion Picture Organizations) in political pressure looking toward repeal or reduction of the 20 per cent Federal admission tax (a step specifically endorsed by President Richard F. Walsh); and by exerting every effort to promote efficiency and prevent waste in theatres and studios.

The delegates were welcomed to Minneapolis by the Governor of the State of Minnesota, the Honorable C. Elmer Anderson; by the Mayor of the city, Hon. Eric G. Hoyer; by U. S. Congressman Roy Wier (who is also a member of Local 13); by the Chief of Police, Tom Jones, and the Sheriff of Hennepin County, Ed Ryan; and were addressed by a Methodist minister, a Catholic priest and a Jewish rabbi.

They were entertained by committees of Minneapolis IA locals under chairmanship of Fred W. Berglund; and by courtesy of local theater owners their IA "delegate" or "guest" badges were open sesame to every theatre in Minneapolis and St. Paul.

Highlights from Pres. Walsh's Report

Some of the highlights of the report President Richard F. Walsh presented to the Convention included these remarks:

"Through cautious precedures, we have been able to avoid most of the ravages threatened by the Taft-Hartley law and similar measures on the state and local levels. But we must never be lulled to sleep by our success thus far in this respect. If there should be a clear-cut reactionary majority in Congress—and an administration which goes along with it—then, I am convinced, the unions would really begin to suffer. To help avoid such a calamity, I have continued wholeheartedly to advance the program of Labor's League for Political Education.

"Whenever organized labor endorses a candidate, his election hinges to a substantial degree, upon how organized labor is regarded. . . . The esteem in which labor is held by the voting public as a whole will have a tremendous bearing on labor's future.

"I want to express my gratitude to those locals and individuals who are doing so much for the good name of the International Alliance. . . . Your response to the Will Rogers Memorial Hospital drive, and to numerous other causes, has been overwhelming. The list of members heading community drives and serving in a wide range of community posts has increased . . . several pioneering locals have stepped forth as sponsors of Boy Scout troops, Little League baseball teams and similar worthy projects.

"All told, we now have 982 local unions, a new record, and the total membership of the Alliance is higher than ever before in history.

"In the war years, the employer got in such a rut that no matter what you gave the public, they would buy, and they did buy. No matter what kind of a theatre they would have to come in and look at it, no matter what kind of projection equipment you gave them, the public

Temporary chairman, Congressman Roy Wier of Minneapolis and former president of Local 13, hands gavel to IA President Richard F. Walsh.

would have to buy. The employer is waking up to a clean and painted theatre, good seats, and projection equipment of the best. With that thinking and our thinking, I am sure that we can cope with the threat of television or any other threat."

United States Senator Hubert Humphrey (D.-Minn.) delivered the principal address of the first day of the convention, speaking for approximately an hour. George Grim, war correspondent and columnist of the Minneapolis *Tribune*, explained the paradox of the fighting in Korea; the delegates heard and applauded a detailed account of the IA's successful struggle against attempted Communist penetration of Hollywood personnel; they listened to James L. McDevitt, National Director of Labor's League for Political Education, and to Rev. Father F. J. Gilligan on the topic: "A Student Looks at Labor."

Highlights from Exhibitor Remarks

Eric Johnston, President of the Motion Picture Association of America, told the delegates that since 1946 the American people have increased their expenditures for personal consumption by 40 per cent, but the percentage take of the motion picture industry has not increased at all but actually declined, and this trend must be reversed. "I am not suggesting that you lower your wages or increase your hours for the same pay," he pointed out. He asked cooperation in two forms: first, to eliminate all unnecessary costs—"be as efficient as we can be." And, second, cooperation in the industry's drive to eliminate the 20 per cent Federal admission tax. "Last year, the motion picture theatre spent seven times as much in taxes as the profit was. No industry can go that way for long, and I am delighted to learn from your President that your organization is going on record to join COMPO's very fruitful drive. . . ."

Col. H. A. Cole, Director of Allied States Association of Motion Picture Exhibitors, noted that costs of theatre operation have mounted—that admission cannot be increased to match because higher admission prices keep the public away and actually reduce the total take. Meanwhile, the theatre's employes are faced with rising costs of living and "where is the money going to come from?" Col. Cole also pointed to the wear and tear on theatre equipment and the need for setting aside a reserve to replace it—"we count on perhaps ten years for the life of a projector"—as well as to the probable need for buying theatre television equipment in the future; and asserted that the theatre cannot at present afford to set aside a reserve for replacements and innovations. "So, five or ten years from now, our house is valueless. It may still be there in some kind of form, but not in the form that will attract customers." He appealed to the IA to help the theatre industry by seeking removal of the Federal tax. President Walsh promised him cooperation along that line.

Major Leslie E. Thompson, RKO executive, requested similar tax cooperation, and, in addition, a "booster campaign." He thought organized labor could do more to promote picture attendance than almost any other element in the business. Labor, he declared, has the same stake in the motion picture industry as the people on the management side. He reminded the convention that, whereas a theatre employs an usher, a projectionist, and perhaps a stage hand, the television set in the living room employs nobody.

Charles W. Perrine, Vice President of Minnesota Amusement Company, owner of 60 theatres, also asked cooperation in promoting picture attendance—"make it part of your job, even though it is not part of your pay"—and in tax repeal. In the latter connection, he suggested that Federal tax action might not in itself be

(Continued on page 26)

Outstanding Acts of the Convention

1. Re-elected President Richard F. Walsh and his "official family." Owing to the death of William P. Covert, former second vice president, the five vice presidents from third to eight were voted forward one step each and Hugh J. Sedgwick, Ontario, Canada, was elected to be eighth vp.

2. Urged Congress meet at the earliest possible moment to appropriate funds for low-cost housing.

3. Referred to the General Office a resolution opposing safety film.

4. Referred to the International President a proposed 25 per cent increase for traveling members. (President Walsh explained to the Convention that it would be unwise and short-sighted to open existing contracts for this purpose.)

5. Called on Congress to refrain from further weakening price controls but on the contrary to strengthen some of them.

6. Voted support "by every means possible within the law" of political candidates opposed to the Taft-Hartley Act, and "every assistance" to Labor's League for Political Education.

7. Endorsed FEPC "in accordance with the position of the AF of L"; endorsed $1.00 minimum wage, expanded social security coverage with reduction of retirement age to 60 years, heavier excess profits taxes and lower taxes for incomes under $5,000.

8. Resolved that each Local Union urge its members to visit their respective Congressional candidates in the interest of elimination of the 20 per cent Federal admissions tax; and appeal again in the same cause to their elected Congressmen when the new Congress convenes.

9. Suggested to the International President and Executive Board that they formulate and recommend a policy to meet the new problems involving wages, manpower and jurisdiction in the television field.

10. Voted formation of a committee to formulate plans for industry-wide pensions.

11. Expressed appreciation and commendation to Dr. Lee de Forest as "a chief contributor to the scientific developments which have made motion pictures so important a medium."

12. Referred to the General Office for action a resolution strongly opposing the new anti-trust suit which is intended to compel producers to release motion pictures for television showings.

13. Favored decontrol of wages in industries where prices are not controlled.

GET BONUS BRILLIANCE

with NATIONAL CARBON'S NEW 9 mm "SUPREX" PROJECTOR CARBON

By far the greatest improvement in "Suprex" carbons since the line was introduced is National Carbon's NEW 9 mm "Suprex" projector carbon for mirror-type lamps. Used in place of the present 9 mm "Suprex" carbon, it gives you:

- **MORE LIGHT AT *LESS* CURRENT**
- **UNSURPASSED ARC STABILITY**
- **COOLER OPERATING LAMPS**
- **REDUCED MAINTENANCE**

SEE IT IN ACTION— LET YOUR *OWN* EYE BE THE JUDGE

ALL AT LOWER CARBON COST!

An important factor in achieving this improved performance at lower cost is National Carbon's NEW composition, *never before used in lighting carbons.* This feature assures you of operating advantages and picture quality not obtainable from any other brand.

The terms "National" and "Suprex" are trade-marks of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY

A Division of Union Carbide and Carbon Corporation

30 East 42nd Street, New York 17, N. Y.

District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco

IN CANADA: National Carbon Limited, Montreal, Toronto, Winnipeg

Heart of the Projector Mechanism

Part II

By ROBERT A. MITCHELL

THE HONOR of borrowing the Swiss geneva movement for movie-projector intermittents probably goes to C. F. Jenkins and Thomas Armat, American movie pioneers. But the geneva movement in their first projector (not the Vitascope of Music Hall fame) bore slight resemblance to a modern geneva intermittent. Completed on the 28th of August 1895, the Jenkins-Armat projector had a 14-slot star-wheel and a sprocket having 56 teeth per side. The drive was a cam with a geartooth-like pin. Edison's Kinetograph of 1891 was the first *camera* with this intermittent.

The Edison Kinetoscope of 1893 (the peep-hole viewing machine, not the projector brought out in 1897) made use of the same type of movement.

Early Model Projectors

Now, the very first practical movie projector (which was also a camera) was the Lumiere Cinematographe, used successfully in 1895. But this utilized a claw movement, not a geneva intermittent. The not-too-successful Latham Pantoptikon projector of 1895 used a striker movement, *as did Thomas Armat's second projector, the Vitascope.*

Amat's Vitascope more than vitalized the audience at Koster & Bial's Music Hall, New York, the night of the 23rd of April 1896. Billed as "Thomas A. Edison's latest marvel" to capitalize on the magic of Edison's name, it projected a short one-reeler titled "The Sea Waves." Patrons went wild, holding up the remaining acts of the variety program until the movie was shown over again.

Meantime, Robert W. Paul was fiddling with the flickers in London. A protagonist of the geneva movement, he reduced the number of slots in the star-wheel from 14 to 7. But because he used two star-wheels and intermittent sprockets in his Theatrograph, the set being driven by one double-pinned cam-wheel, Paul still had a sum-total of 14 star-wheel slots in his projector.

In 1897, we find the familiar 4-slotted star-wheel in *three* projectors using the geneva intermittent. These projectors are:

An improved Paul projector.

A third Armat projector.

The Edison Kinetoscope (this time a projector, not the peep-hole machine).

Let the reader decide which of these three picture machines was first. We don't know.

In 1898 the first *practical* motion-picture projector using the conventional 3:1 geneva intermittent appeared on the market. This was the Optigraph, the first projector made by Motiograph. The Optigraph was designed by Alvah C. Roebuck, founder of Motiograph (then known as the Enterprise Optical Mfg. Co.).

About the time that the loosely organized American motion picture industry was becoming centered in the Los Angeles area—the first Hollywood production was a Nester Co. western made in 1911—there were scores of different makes and models of projection machines on the market. The nickelodeon was a booming business; the plush palaces of the photoplay were already in sight.

It was during the first fifteen years of the present century that three remarkably satisfactory projectors made their appearance. These were the Motiograph 1A, the Simplex Regular, and the Power's.

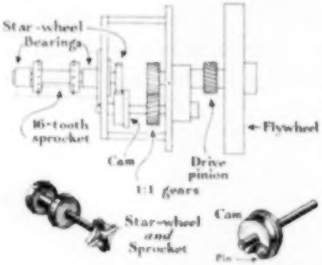


FIG. 4. Geneva movement, assembled in its oil-well case, and with its star-wheel and cam shown separately. The design here pictured is the one in which the flywheel, instead of being mounted directly on the cam-shaft, is geared to it through two small 1:1 gears, and thus lined up with the intermittent-sprocket-star-wheel shaft.

The Motiograph 1A was a direct development of the Optigraph. The Power's was an original creation from the outset; but the Simplex was a development of the Edengraph, a projector originated in 1899 by F. B. Cannock, a projectionist at the Eden Musee, New York City. Cannock later improved this machine with the aid of E. S. Porter. The Simplex made its commercial appearance in 1911.

The writer does not know whether there are Motiograph 1A's still in theatre use somewhere in the world; but it is common knowledge that Simplex Regulars modernized with rear shutters, better gears, better sprocket idlers, slip-in aperture gate assemblies, double-bearing intermittents, etc., hold sway even now in some projection rooms. And the last Power's model, though not common by any means, can still be found in the "picture halls" of back-woods hamlets.

The 4-slotted star must always be used in a 3:1 movement because if the cam-wheel were made larger in order to give a quicker pulldown, the cam-pin would not enter the slots tangentially, but would strike the sides of the slots at the moment of contact, resulting in noisy operation, rapid wear, and damage to the film.

Geneva Movement Details

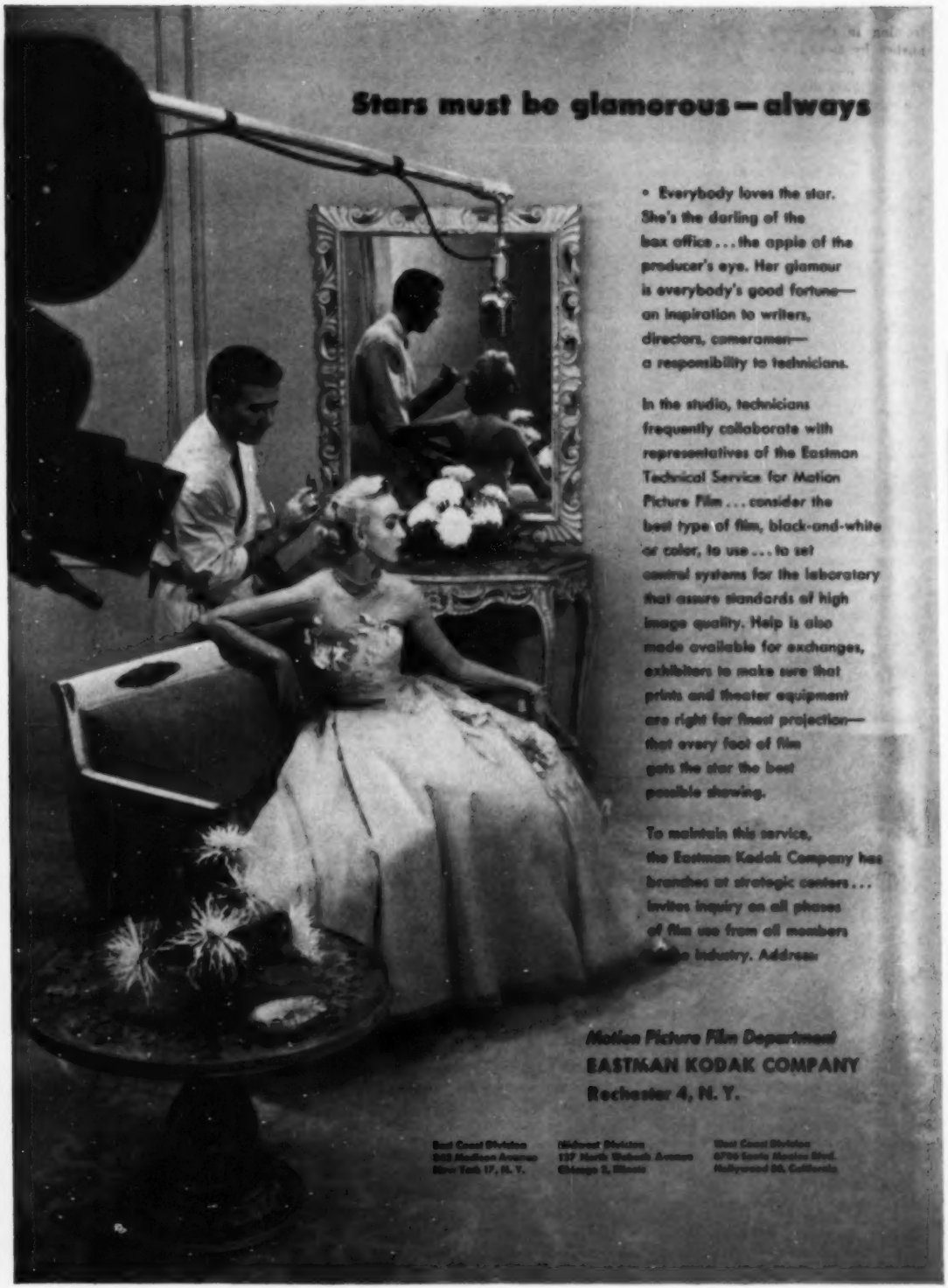
In a 3:1 geneva movement, acceleration is very slow at the beginning of the pulldown. The speed is greatest at the middle of the pulldown (film-speed being 860 feet per minute for an instant). Thereafter, the star and sprocket slow down gradually until they come to the reset position. Now if it were not for this *gradual* deceleration, the film would have a much greater tendency to overshoot, continuing to move down through the gate on account of its own momentum *after the sprocket had stopped turning.* A terrific amount of pad tension would be required to stop the film instantly—and you can well imagine what the sprocket-holes would look like in *that* case.

All of these facts must be kept in mind when attempting to evaluate the worth of any type of intermittent.

Figure 4, while not reproducing exactly all the details of any specific make of geneva intermittent, shows how the parts are put together and geared in the Simplex Regular, the Super Simplex, the Simplex E-7 (but not the X-L), the Brenkert, Century, Wenzel, DeVry, and movements made by La Vezzi. The same movement is interchangeable in many of these machines without drive-gear alterations. (DeVry uses chain drive.)

Note especially that the gears marked "1:1" enable the constant-speed drive pinion and flywheel shaft to lie on the same axis as the star-wheel and intermittent-sprocket shaft. Thus the entire movement can be rotated around this axis without interfering with the mesh between the drive-pinion and the gear which drives it (not shown).

Motiograph projectors and the Simplex X-L dispense with the "1:1" internal gearing by attaching the flywheel directly to the cam shaft. The Simplex X-L rotates the sprocket to frame; but


Stars must be glamorous — always
• Everybody loves the star. She's the darling of the box office . . . the apple of the producer's eye. Her glamour is everybody's good fortune— an inspiration to writers, directors, cameramen— a responsibility to technicians.
In the studio, technicians frequently collaborate with representatives of the Eastman Technical Service for Motion Picture Film . . . consider the best type of film, black-and-white or color, to use . . . to set control systems for the laboratory that assure standards of high image quality. Help is also made available for exchanges, exhibitors to make sure that prints and theater equipment are right for finest projection— that every foot of film gets the star the best possible showing.
To maintain this service, the Eastman Kodak Company has branches at strategic centers . . . invites inquiry on all phases of film use from all members of the industry. Address
Motion Picture Film Department
EASTMAN KODAK COMPANY
Rochester 4, N. Y.
East Coast Division
342 Madison Avenue
New York 17, N. Y.
Midwest Division
137 North Wabash Avenue
Chicago 2, Illinois
West Coast Division
6706 Santa Monica Blvd.
Hollywood 38, California

framing in the Motiograph is accomplished by moving the unit vertically.

There are arguments *pro* and *con* these methods of framing. Brenkert, for instance, is of the opinion that rotary framing is better because, when the sprocket maintains the same distance from the gate at all times, it is unnecessary to have an intermittent-sprocket shoe independent of the gate-door—requiring one extra operation in threading—and also because it is believed that sprocket-tooth wear is more even with rotary framing.

Intermittent Bearings and Cam-pins

In single-bearing intermittents there is only one bearing for the sprocket and star-wheel shaft. This bearing, naturally, is between sprocket and star. If an extra bearing be added on the outboard side of the sprocket, the movement is designated as a double-bearing movement. Single-bearing intermittents of the old Simplex-Regular type are no longer made. The International Projector Corporation (Simplex) gave them up in 1933 and discontinued factory repair service on them in 1939. But the Simplex double-bearing movement fits the old Regular and the newer Super without alterations in the mechanism. The two are interchangeable. Incidentally, other companies supply these standard intermittents—La Vezzi and Century, for example.

It was found that when old-style single-bearing intermittents became only slightly worn, a vibration of the picture, looking like hazy focus, is likely to occur. At first this haze can be seen only from the front rows; but it gradually extends to the rear of the auditorium.

Motiograph also uses a double-bearing intermittent; and it has the advantage of a construction which enables the sprocket to be reversed or replaced without the necessity of removing the intermittent unit from the head. Brenkert, however, has retained the simplicity of the original single-bearing intermittent while overcoming its defects by means of a very long bronze bearing.

In other makes of projectors, the intermittent movement is one of the very few units where hard steel is permitted to run against hard steel; but Brenkert is able to make use of bronze bearings, which can be machined with astonishing accuracy, because of the Brenkert lubrication system which insures a continuous flow of oil over all parts of the intermittent. If the oil were confined in a small intermittent case, the heat generated and confined therein would result in uneven expansion between the bronze bushings and the steel shafts, which might result in rapid wear and even bind-ups. The Brenkert models, by the way, follow widespread European practice in the large size of the star and cam.

We are informed by a European correspondent that all the "better" projectors there have *roller* cam-pins. Stationary pins are said by the same highly respected source to be confined to *Yegermaschinen* (low-priced projectors for export only). Now the American Brenkert projectors actually *do* have the roller cam-pins so greatly desired in Europe! But other top-quality projectors have non-revolving cam-pins of hardened steel.

As far as this writer's experience goes, he has yet to see a case where the stationary, or non-revolving, cam-pin has in any way impaired the quality of the geneva movement or its performance. (The same, however, is not true of the Power's movement.)

Power's Projector

The unique and interesting thing about the Power's mechanism is the pin-cross intermittent. It worked silently and very rapidly, at approximately the very desirable 5:1 ratio. The famous Power's No. 6 (solid-pin) projector appeared in 1909. The 6B, utilizing roller pins, was made in 1920. Many projectionists had hoped that the highly efficient Power's pin-cross intermittent would be adapted to the Simplex when, in 1925, plans for the Power's No. 7 went out the window and Simplex and the Nicholas Power Co. were consolidated into the International Projector Corp.

From the projectionist's point of view, the overall design of the Power's is rather primitive. The dust-catching open construction of the head, the gearing of the intermittent through a toggle drive to permit the framing carriage to be moved up and down without affecting shutter timing, the very small film-gate, the gate-door which swings on hinges, the arrangement of flywheel, sprockets, idlers, etc., seem more than a little Victorian. On the credit side may be entered the simplicity of the Power's mechanism, the ease of servicing, and the extreme quietness of operation when all gears, bearings, and sprockets were in good condition.

The quietness of the Power's never fails to astonish projectionists who have not previously operated it. Despite the

(*Continued on page 30*)

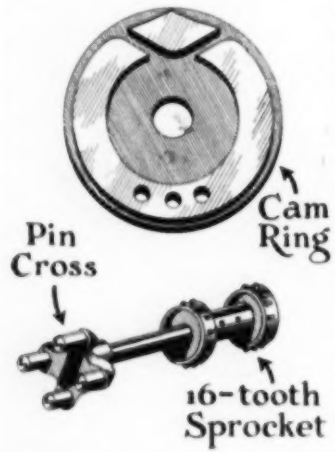


FIG. 5. The Power's pin-cross intermittent movement. The diamond portion of the cam-ring imparts a quarter-turn to the pin-cross, after which the roller pins are again engaged and locked in "at rest" position by the circular portion of the cam-ring. The three small holes in the cam-ring have nothing to do with the action but are the means by which the ring is statically and dynamically balanced.

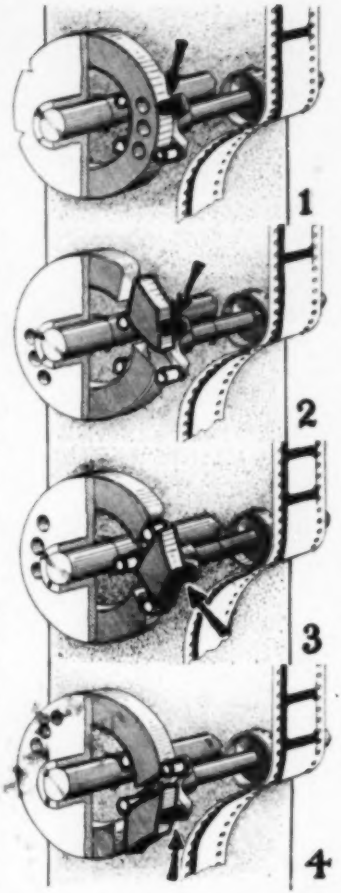


FIG. 6. How the pin-cross intermittent works. One of the four pins is shown in black for identification. Follow its action to see how the diamond rotates the cross and attached sprocket which, of course, moves clockwise.

BOTH GROUPS NEED DIFFERENT TYPES OF SPOTLIGHTS

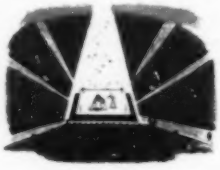
but both choose

LARGE THEATRES

SMALL THEATRES

Strong

ARENAS



THE *ONLY* SPOTLIGHTS

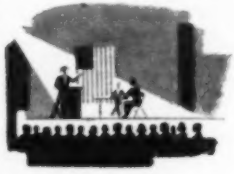
with all these

ADVANTAGES

- A really bright, quiet, flickerless light.
- A sharp edge from head spot to flood.
- Requires no heavy rotating equipment. Simply plug into 110-volt outlet.
- True portability. Mounted on casters. Easily disassembled for shipping.
- Two-element variable focal length objective lens system. Silvered glass reflector. Horizontal masking control can be angled 45 degrees in each direction. Fast operating 6-slide color boomerang.

HOTELS

AUDITORIUMS



NIGHT CLUBS

TROUPER HIGH INTENSITY ARC SPOTLIGHT

Adjustable, self-regulating transformer in base. Automatic arc control.
A trim of carbons burns 80 minutes.
Available with slide projector attachment for projecting a clean, sharp, clearly defined picture even on largest screens.

ICE SHOWS

SCHOOLS

TROUPERETTE INCANDESCENT SPOTLIGHT

Projects 6½ times brighter head spots. Utilizes all the light through most of the spot sizes as contrasted to spotlights which vary spot size solely by irising, thus losing substantial light.

THE TROUPER

THE TROUPERETTE

THE STRONG ELECTRIC CORPORATION
"The World's Largest Manufacturer of Projection Arc Lamps"
14 City Park Avenue Toledo 2, Ohio

Please send free literature on the ( ) Strong Trouper Arc Spotlight; ( ) Strong Trouperette Incandescent Spotlight.

NAME .....
STREET .....
CITY .....
STATE .....
NAME OF SUPPLIER .....

Parallax Barriers in Stereoscopy and Tv†

Parallax barriers are basic to certain systems of three-dimensional projection which do not require the audience to wear spectacles of any kind; and also form the basis of certain full-color television picture tubes. An outline of the optical properties of these barriers as used in both devices is here presented.

By SAM H. KAPLAN

Engineering Consultant, Chicago, Ill.

A PARALLAX BARRIER may be defined as a masking device which, when interposed between an object space and an image space, prevents any part of the image space from being sighted except along a given set of predetermined directions.

The concept of the parallax barrier is generally attributed to Berthier of France who suggested it in 1896. However it was first applied by Frederick E. Ives to produce stereoscopic still pictures in 1904. These were called "parallax stereograms" and required no separate viewing accessories. The substitution of lenses as an alternate to mechanical blocking barriers was proposed by Gabriel Lippman of France in 1908.

A barrier system with more than two elements behind each barrier aperture was invented by C. W. Kanolt, who obtained U. S. Patent 1,260,682 on March 26, 1918. His stereoscopic pictures were called "parallax panoramagrams" and revealed a multitude of stereoscopic views as the picture was viewed from different angles. A radial nonparallel-type barrier system was invented by B. T. Ivanof who first used it in 1941 to show projected stereoscopic motion pictures in Russia.

Since both light and electron beams travel along straight paths, the laws of geometric optics apply irrespective of direction of travel along this path. Consequently, parallax barriers can be utilized either where a viewing screen is observed from predetermined directions as in stereoscopic imagery, or where a luminescent screen is impinged upon by electron beams coming from specified directions, as in color television tubes. Parallax barriers are now being used for both of these very different purposes.

The use of parallax barriers as external attachments to cathode-ray tubes for stereoscopic television is included in several patents. The use of such parallax barriers *inside* a cathode-ray tube, as a positive means of insuring that predetermined portions of a mosaic screen would be subjected to bombardment only by a predetermined electron beam, was first revealed in German Patent 736,575, issued June 22, 1943. The application date is July 12, 1938, and the inventor was Dr. Warner Fleshig of Fernseh A.G.

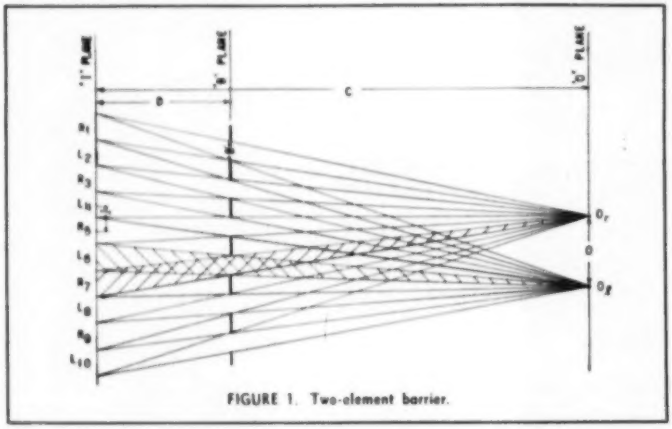


FIGURE 1. Two-element barrier.

Application of the parallax barrier to stereoscopic pictures is illustrated in principle in Figure 1.

Two pictures taken from slightly separated points of view and designated as left and right views, are divided into fine strips and reassembled on an alternate basis: R_1, L_2, R_3, L_4, R_5, etc., (the odd numbered L strips and the even numbered R strips are not used).

The picture thus assembled is located at the "I" (image) plane of Figure 1. In front of it, at the "B" or barrier plane, is located a barrier composed of alternate opaque and transparent strips of equal width. On the "O" or object plane, Figure 1 shows the viewer's right and left eyes, designated O_r and O_l, respectively. If the barrier is properly located between the eyes and image, the viewer's *left* eye will see only the L strips of the image, the R strips being hidden from it by the barriers; and similarly the viewer's right eye will see only the R and not the L strips and barriers. If the strips are of such small width that they are not individually resolved by the eyes a stereoscopic picture results, since each eye sees a slightly different image.

From simple geometrical considerations it is possible to determine that the relationship between image distance (D), distance between image strip centers (I), separation of eyes (O), and distance of eye plane to image plane (C), is:

$$D = \frac{IC}{O + I}$$

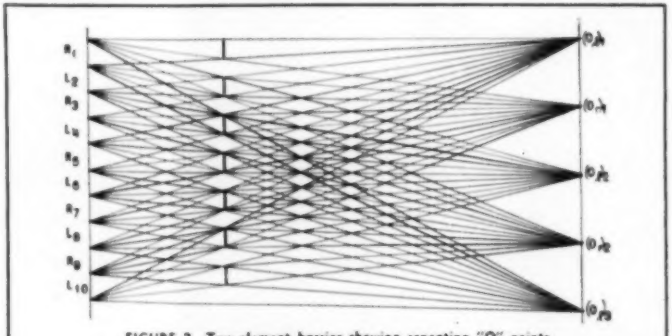


FIGURE 2. Two-element barrier showing repeating "O" points.

† Cond. from Jour. SMPTE, July 1952.

Although the distance between the eyes (labeled as "O" points), and the image, increases steadily in going from the center to the edges of the image, the band width of the picture strips and barrier strips is constant, and is independent of the angle between any image portion and line of viewing. The width (B') separating the barrier strips can be determined from similar triangles as:

$$B' = \left(\frac{C - C}{C}\right) 1$$

In Figure 1 the distance B between barrier strip centers is 2B'.

The question next arises whether there are other points in addition to O_l and O_r from which the same picture (i.e., left image seen by left eye and right image seen by right eye) can be viewed. As shown in Figure 2, by projecting rays from the image through the apertures between barriers, using in turn different barrier spaces for a given image strip, one can obtain an alternating sequence of equally spaced O_l and O_r points.

Any combination of O_l and O_r points, whether adjacent or nonadjacent, will fulfill the condition that one "O" point "sees" only one image set and the second "O" point sees the alternate image set. Figure 3 shows in more detail the relationship between these different "O" points and a given image strip. The only difference is that a particular strip (in this case L_1) is "seen" by $(O_l)_1$ by $(O_r)_2$, and by $(O_l)_3$ through different barrier plane apertures—as by persons sitting side by side in a theater.

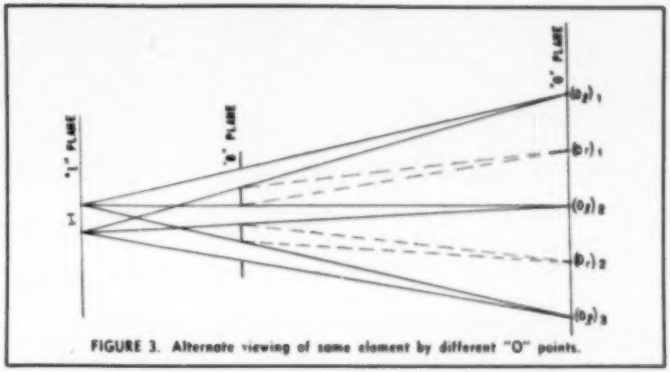


FIGURE 3. Alternate viewing of same element by different "O" points.

Radial Theater Arrangement

If the image, barrier and source surfaces are planar, they need not be parallel. One such arrangement of interest is the radial plane arrangement, invented by Ivanof and used for stereoscopic pictures. A shown in Figure 4, all three planes meet in a common line of intersection. For motion pictures the "I" plane corresponds to the screen, the "B" plane is the parallax barrier and the "O" plane the audience. This arrangement permits a large number of seats to satisfy the parallax condition, in contrast to the parallel plane arrangement (Figure 2) where only one row in the theater could meet the necessary condition. (Of course, if the rows of seats in a theater could be stacked vertically instead of horizontally then the parallel plane arrangement of Figure 2 would be suitable to theaters.)

One defect in the practical application of parallax barriers is the transmission loss introduced by the barrier itself. This limitation can be minimized by replacing each aperture or slit by a spherical or a cylindrical lens, as shown in Figure 5. Replacing the aperture by a larger size lens can theoretically cut the barrier loss to zero. Instead of acting as a mechanical barrier, the lenses refract or converge the rays to the proper position on the image surface. In stereoscopic picture processes modern practice sometimes calls for cylindrical lens elements molded into the film base.

Instead of two viewing points (called "O" points) coupled to two mutually intermeshed image area sets, three or more intermeshed image area sets can be coupled to a corresponding number of viewing points. And while the "O" plane has been considered thus far as a viewing plane, the various "O" points in that plane may also be considered as origins of electrons—as in a Tv picture tube.

Color Tv Application

If one deals with electron rays instead of light, electron lenses can be used, and the apertures themselves can act as the electron lenses. Owing to the focusing action, these apertures, serving as electron lenses, can be larger, thus increasing the number of electrons reaching the image plane. To make the apertures behave as electron lenses, it is only necessary to provide for an electric field between I and B (Figure 1) greater than that between B and O.

The parallax barrier is particularly suitable as an internal member in cathode-ray tubes, permitting positive screen area control and ensuring that a given beam will impinge only on a given portion of the fluorescent screen.

Specified screen areas are associated with a desired source of electrons, and electrons from other sources are blocked from the same area by the barrier. The

(*Continued on Page 25*)

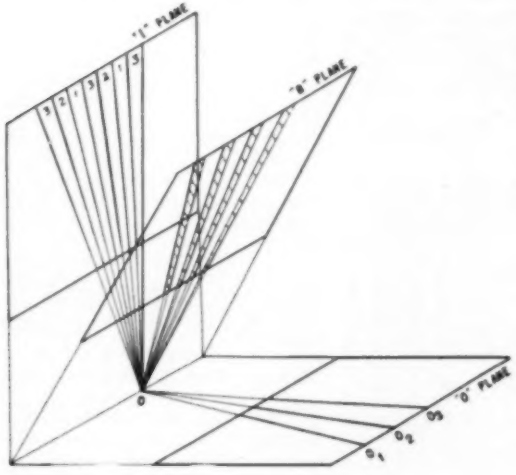


FIGURE 4 (left). Radial barrier extends system of Figure 2 to many rows of seats.

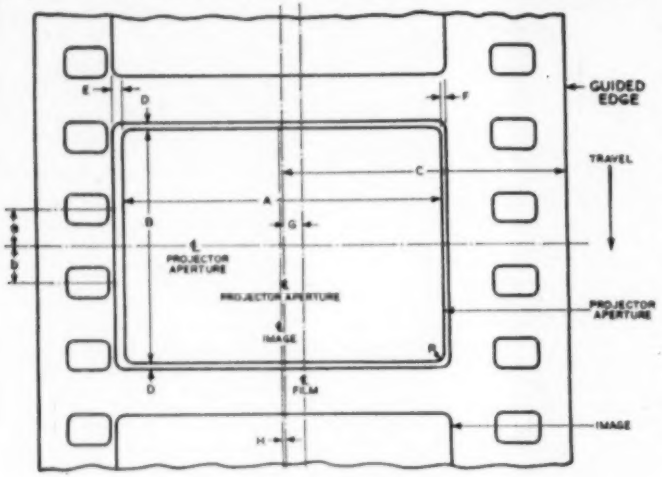
FIGURE 5 (below). Lens equivalent of barrier.

Standards Promote Better Projection

III

IP herewith concludes for the present its presentation of those established *35-mm* projection standards that are of especial interest to projectionists. As new standards are adopted in the future, IP will report them. Standards for *16-mm* projection are presented elsewhere in this issue.

Projection Aperture of 35-mm Sound Projectors (Z22.58-1947)



These dimensions and locations are shown relative to unshrunk raw stock.

Dimension	Inches	Millimeters
A	0.825 ± 0.002	20.95 ± 0.05
B	0.600 ± 0.002	15.25 ± 0.05
C	0.738 ± 0.002	18.74 ± 0.05
D	0.0155	0.394
E	0.028	0.71
F	0.015	0.38
G	0.049	1.24
H	0.006	0.15
R	0.05 approx	1.3 approx

a = b = ½ longitudinal perforation pitch.

The aperture dimensions given result in a screen picture having a height-to-width ratio of 3 to 4 when the projection angle is 14 degrees.

Buzz-Track Test Film for 35-mm Sound Reproducers (Z22.68-1949)

1. Scope and Purpose

1.1 This specification describes a film which may be used for checking the lateral scanning slit placement of 35 millimeter motion picture sound reproducers.

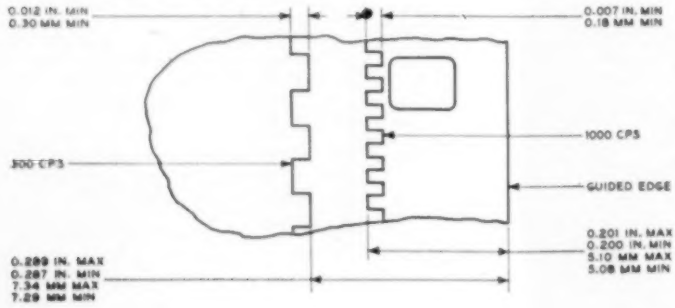
2. Test Film

2.1 The test film shall be a direct positive recording or a print from an originally-recorded negative and shall contain 300-cycle and 1000-cycle square-wave tracks on either side of the central exposed strip as shown in Fig. 1.

2.2 The central exposed strip and the exposed portion of the two signal tracks shall have a minimum density of 1.4 and a maximum density of 2.0.

2.3 The film stock used shall be cut and perforated in accordance with the American Standard Cutting and Perforating Dimensions for 35-Millimeter Motion Picture Positive Raw Stock, Z22.36-1947, or the latest revision thereof approved by the American Standards Association, Incorporated.

2.4 The film stock used shall have a shrinkage of not more than 0.50 percent.



New NCC Projector Carbon

The constant search for more light on the screen, higher current efficiency, lower carbon consumption and greater burning stability has again been further advanced. National Carbon Company announces a new 9-mm & 14 in. "Suprex" positive, incorporating a new composition of materials. These novel materials result in performance characteristics previously unattainable, NCC reports.

The new "National" carbon is intended for use in mirror-type lamps in medium and large theatres. It is rated at 65-75 amperes in contrast with the former 9-mm "Suprex" rating of 75-85; its voltage requirements are also lower, being approximately 41 volts at 65 amperes; 45 volts at 75 amperes.

Either of two advantages may be realized. The user can obtain more screen light with the same carbon consumption; or the same light as before with lower carbon consumption, cooler lamp, improved arc stability, and decreased current and maintenance costs. Further, the new carbon will operate well outside its rated current range, performing satisfactorily down to 60 amperes and with reasonable performance safety factor above 75 amperes, it is stated.

A variety of trims is possible. For example, the new 9-mm positive can be substituted, not only for the former 9-mm positive, but also for the present 8-mm "Suprex." In this latter substitution, NCC says, it will give equal light with better distribution at the same current (up to 70 amperes) cost, and lower carbon consumption cost. In such operation the new carbon is burned with an 8-mm "Orotip" C negative.

Stability of operation and uniform light intensity are maintained with all types of power sources, National Carbon declares.

The new carbon was released only after extensive working tests in theatres repeatedly and abundantly verified the highly favorable findings of the laboratories.

Lawrence Theatres Buy RCA Service

RCA Service Co. will supply maintenance and sound replacement parts to the eight theaters of Joseph L. Lawrence circuit under terms of a contract recently concluded.

Budget Pains Turn Tv to Projection

INCREASING use of projectionists and projecton techniques in Tv studios is the current result of sponsor pressure for better shows at lower cost. What the sponsors want can't be achieved by the expensive method of building and tearing down sets—they want a $10,000 Tv production to look like a million-dollar motion picture!

Budgets are tight—but even if they were not a $10,000 appropriation can't be ballooned that far. Actually, however, budgets are extremely tight. The sponsor does not conceive of himself as competing against Hollywood lavishness; he views his Tv program in the light of the cost of comparable newspaper, magazine, or radio advertising. But the audiences—now that the novelty is wearing off—expect something at least remotely like what they have been accustomed to seeing in their local theatres; and the sponsor must give them what they want or they may stop looking at their Tv sets and go to the movies!

The projectionist and his skill with films and slides, plus one or two new projection devices developed specifically for Tv, have thus presented at least a partial and temporarily satisfactory solution to the problem of making ten thousand dollars look like a million.

Rear projection of 16-mm and 35-mm films (the trend is now toward 35-mm) plus rear projection of slides, rear projection of "effects" of the kind used in thousands of theatres in the 1920's and still used in some, and plus special new effects provide the Tv players with backdrops that look like the real thing—and offer skilled projectionists added opportunities for part- or full-time employment.

Wide angle lenses, having a spread of 12 inches width for each 9 inches of throw, are in general use for such rear projection. Screens are plastic, transmitting about 50 per cent of the light, and range from 9′ x 12′ up to 12′ x 24′. Projectors use arc lamps of from 90 down to 35 amperes, or incandescent lamps from 5KW down to 2KW. On wide screens as many as four projectors may be operated with images carefully "feathered into" one another to maintain continuity and equality of brilliance.

Simple slides are more-or-less standard 4" x 5" units, commonly consisting of a developed emulsion on a single piece of heat-resisting glass. Libraries of such slides, available on a rental basis, have been built up in a number of key cities. With airblast cooling a slide can be projected continuously for half an hour or more, and suffer no damage.

"Effect" slides, formerly widely used to provide a frameword for the title of a feature picture, and still used in some theatres for that purpose, provide today's Tv with moving backgrounds not otherwise attainable at any comparably low cost. Moving clouds, ripples, flames, snowstorms and the like can readily be created in this way. Effects can be interleaved by means of revolving discs mounted on another projector.

A piece of special equipment finding rising favor—and one that should also prove useful in producing special "effects" in theatres—is the Panoramic Slide. This device utilizes strips measuring 4" high and from 20" to 72" long. The long slide is automatically moved through the aperture at any desired speed, permitting the actors to appear to be walking or riding along while actually remaining in one place. The enormous saving in cost achieved by such a slide strip in contrast to the cost of using built-up background scenery moving on a treadmill, needs no emphasis.

Motion picture rear projection, in addition to slide rear projection, is growing in importance. Originally, Tv studios were seldom built with local code and Underwriters' projection requirements in mind, and therefore 16-mm projectors equipped with 35-mm lamps were at first preferred. However, the amount of light that can be pushed through a 16-mm aperture is somewhat limited. It is adequate when all that is wanted is a background representing the interior of an automobile or railroad coach, but when, for example, a boat scene or hayride are called for, no one is too happy with the 16-mm results. Therefore the rear-projection Tv tide is now swinging toward 35-mm, where limitations are more generous.

With these new tools at hand and with a well-thought-out combination of built scenery and rear projection, a skilled and ingenious projectionist can quite inexpensively put the Tv actors in a moving train, boat, or automobile, or strolling down a Paris boulevard.

Rear projection with slides and film is a growing field in Tv, having pretty much unlimited horizons for new developments and resourceful projectionists. It still will not make $10,000 look like a million dollars; but the sponsor may be content if it makes 10 look like 20. Meanwhile, the theatre, of course, will be improving its own techniques, and may very well in time borrow from the Tv studios, and from Tv projectionists a trick or two to enhance its own audience appeal.

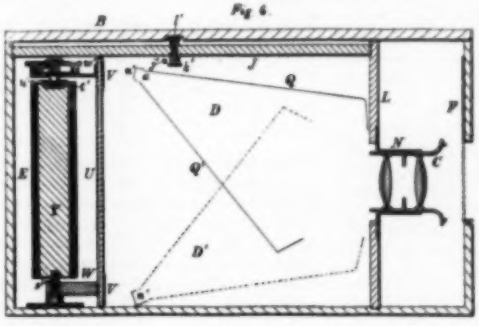
(No Model.) 4 Sheets—Sheet 3

G. EASTMAN & F M COSSITT

DETECTIVE CAMERA

No. 353,545. Patented Nov. 30, 1886.

Fig 6.



Pivoted drop shutter of Eastman's first camera in cross section. When button I' on top of camera is turned, shutter QQ' drops from D to D'; after exposure is returned to D by a knob on side of the camera, not shown in drawing.

IN THE
SPOTLIGHT

AN AMENDMENT introduced by Rep. Paul C. Jones (D.-Mo.) and adopted by the House specifically calls for the exemption of wage controls in motion picture theatres, film studios, and radio and television stations. Price controls in these industries are already exempt and the loose wording of the original bill led one to believe that the exemption did not extend to the control of wages.

• "Unfair employment practices," is the charge leveled against the management of the Pineville Road Drive-In Theatre by IA Local 322, Charlotte, N. C. We are advised that members of the Local are picketing the theatre every evening until closing.

• In an effort to help stimulate attendance at motion picture theatres, Local 735, Mt. Clemens, Mich., has agreed to help the exhibitors in the Local's jurisdiction in the "Take Her Out Once a Week" campaign. Bert Penzien, Fritz Devantier, Roy Suckling and Ralph Brough were appointed by the Local to serve on a committee to promote this campaign in neighboring small towns.

• The temporary injunction granted to A. L. Royal, secretary-treasurer of the Mississippi Theatre Owners Ass'n and head of a chain of theatres in that state, against Local 616, Meridian, Mass., was withdrawn by mutual agreement, upon the signing of a new contract covering two of the theatres in dispute.

• Michael J. Mungovan, business representative of Rochester Local 25, was re-elected 4th vice-president of the New York State Federation of Labor at the recent Federation Convention. Mungovan was also chosen to represent the Rochester Central Trades and Labor Council at the forthcoming AF of L Convention scheduled to be held in New York City the week of September 15.

• Projectionist Local 219, Minneapolis, Minn., recently concluded negotiations with the independent theatre owners and signed new three-year contracts calling for a wage increase of 3% for each of the first two years, and an additional 4% hike the third year, retroactive to December 1, 1951.

• The members of Local 294, Phoenix, Ariz., are very proud of their organization and rightly so, we believe. Although the membership of the Local is relatively small—only 43 men—it recently presented a check for $500 to the building fund of the Samuel Gompers Memorial Crippled Children's Clinic. The clinic is being built by the various AF of L unions and is financed by contributions from individual members.

Nugget Cornell, business representative of Local 294, in turning the check over to the clinic fund, stated that his members were very happy to take part in such a worthy project, for not only do the crippled children need all the help they can get but he also stressed the importance of labor unions taking an important part in all community and civic affairs.

• Veteran projectionist, Cecil Wood, member of New York Local 306, Miami Local 316, and past president of the 25-30 Club, will resign October first next from his job as projectionist at the New York Paris Theatre and retire to Miami to live. Wood, who is 79 years old, started his career as a projectionist back in 1899 with the Jeffries-Sharkey fight films and has worked continuously at the craft since that time—a total of 53 years. He deserves a rest!

• A fatal heart attack ended the career of William F. Hall, 45, charter member of Local 451, New Castle, Penna. Hall had been employed for the last few years as projectionist at the Vogue Theatre.

• The Motion Picture Screen Cartoonists Local No. 839, Hollywood, Calif., is the latest addition to the IA family. M-G-M's Bill Schipek was elected the Local's first president.

• At the June 27 election held by Hollywood Film Enterprises, Inc., of Hollywood, Calif., laboratory technicians, their apprentices, and helpers voted 12 to 4 in favor of IA representation. The vote was certified on July 9 last.

• Alonzo S. Bennett, secretary-treasurer of Local 521, Long Beach, Calif., tells IP he is getting remarkably fine results from the Huff carbon coolers recently installed in the Rivoli Theatre, Long Beach, where he is chief projectionist. More light, less amperage, less carbon consumption, less pitting of mirrors, cleaner lamps, and the practicability of changing carbons with bare fingers instead of with pliers are advantages Bennett says he finds in the use of these coolers.

• Increased payments in social security benefits became effective July 1 last. We suggest that all persons drawing these benefits apply at their nearest Social Security office for further information as to how they may take advantage of the increase.

• At the season's closing meeting of the 25-30 Club, a life membership card was presented to Al Kaye, past president. The presentation was made by Morris J. Rotker, also a past president of the Club. Kaye is an IA old-timer, having held membership in Local 384, Hudson County, N. J., since June 1915, and has served the Local in various official capacities. He has been employed for the past 29 years at Warner Bros.' De Witt Theatre in Bayonne, N. J.

Al Kaye is active in Masonic circles and is a member of Menorah Lodge No. 249 F. & A. M. (Bayonne), and Master in 1942. He also holds membership in the Past Masters Ass'n of Hudson County, N. J. He has been a member of Arion Lodge K. of P. No. 68, Bayonne, N. J. for the past 32 years; past president of the Theatrical Square Club No. 1 of New Jersey, and is a member of many other fraternal and benevolent organizations.

• In honor of the 40th anniversary celebration of Local 253, Rochester, N. Y., the New York State Association held its Spring-Summer meeting on July 16 at the Moose Club in Rochester. At the conclusion of the Association meeting, the delegates and their wives were the guests of Local 253 at a delicious steak dinner. Lou Levin, president of the Rochester Local, and Roy Fisher, the Local's first president, greeted the guests and made the welcoming speeches. A gala floor show followed the dinner and the festivities did not end until the wee hours of the morning. All present agreed that it was one of the most enjoyable events of the season.

• Negotiations are pending between New York Local 306 and the theater circuit heads on new contracts to replace the ones which expire the end of this month. The Local is asking for a 13% wage increase plus an additional 2% boost in its welfare fund—from 5- to 7%.

• The newly formed IA Local 839 (Motion Picture Screen Cartoonists) got off to a flying start with the new two-year agreement it reached with the Animated Film Producers Ass'n. The contract provides for a 10% increase in salary, retroactive to March 15 last.

The American Labor Movement

Officially titled "A Brief History of the American Labor Movement", the following was prepared by the Department of Labor for use of the State Department's labor attaches abroad. It traces the growth of labor union activities and labor legislation from Colonial times to the second Truman Administration.

Chapter I. Early Organization

UNIONS have a long history in the United States. Even before the Declaration of Independence, skilled artisans in handicraft and domestic industry joined together in benevolent societies, primarily in order to provide members and their families with financial assistance in the event of serious illness, debt, or death of the wage earner. Although these early associations had few of the characteristics of present-day labor unions, they did bring workers together to consider problems of mutual concern and to devise ways and means for their solution.

Crafts such as those of carpenters, shoemakers, and printers formed separate organizations in Philadelphia, New York, and Boston as early as 1791, largely to resist wage reductions. These unions were confined to local areas and were usually weak because they seldom included all the workers of a craft. Generally, they continued in existence for only a short time. In addition to the welfare activities, these unions frequently sought higher wages, minimum rates, shorter hours, enforcement of apprenticeship regulations, and establishment of the principle of exclusive union hiring, later known as the "closed shop."

Many characteristic union techniques were first developed in this period. For example, by the beginning of the nineteenth century the principle of collective bargaining was already well understood in labor and employing circles and was frequently applied in disputes. The first recorded meeting of worker and employer representatives for discussion of labor demands occurred between the Philadelphia shoemakers and their employers in 1799. The printing crafts of Philadelphia and New York rapidly followed suit.

Also, a forerunner of the union "business agent" grew out of the need to check on shops to see whether they were adhering to the union wage scale. The early "tramping committees" and unpaid representatives later led to specialized, paid agents known as "walking delegates."

Strikes, during which workmen quit their employment in a body, paralleled the development of organization and collective bargaining. The New York bakers were said to have stopped work to enforce their demands as early as 1741, although this action was directed more against the local government, which set the price of bread, rather than against the employers. The first authenticated strike was called in 1786 by the Philadelphia printers who provided benefits for their striking members.

A sympathetic strike of shoe workers in support of fellow bootmakers occurred in 1799 in the same city. In 1805, the shoemakers of New York created a "permanent" strike benefit fund, and in 1809, these same workers participated in what was perhaps the first "general" strike when they extended strike action against one employer to include several others who had come to his aid.

Employer Opposition

As unions became stronger the wage question increased in importance and employers formed organizations to resist wage demands. Where circumstances appeared favorable, employers attempted to destroy the effectiveness of a union by hiring nonunion workers and by appealing to the courts to declare the labor organization illegal. The legal fight against unions was carried through the courts in Philadelphia, New York, and Pittsburgh between 1806 and 1814. Unions were prosecuted as "conspiracies in restraint of trade" under an old English common law doctrine that combinations of workmen to raise wages could be regarded as a conspiracy against the public.

The attempt of courts to apply this doctrine of conspiracy aroused a controversy which lasted throughout most of the nineteenth century. Slowly judicial attention was shifted from the question as to whether a mere combination of workmen was a conspiracy to one as to the means they used to gain their ends. Thus while unions, as such, became regarded as "lawful," strikes, boycotts, and other attempts of workers to secure their demands were the subject of legal action in the courts for many decades.

The early conspiracy cases against labor organizations, combined with a business recession following the Napoleonic wars in Europe, seriously affected the trade-unions, many of which passed out of existence. After a low point in membership in 1820, however, worker organizations again sprang up in the larger cities among hatters, tailors, weavers, nailers, and cabinetmakers. Organizations of factory workers also appeared for the first time during this period.

Between 1827 and 1832 workers' organizations gradually turned to independent political activity. The factors leading to this development are explained by the historian, Mary Beard, who, in *A Short History of the American Labor Movement*, says:

> In the first place, property qualifications on the right to vote, which had been imposed by the first state constitutions, were abandoned and the ballot put into the hands of practically every workingman. In the second place, the prosecutions of labor unions in the courts of law had driven workingmen to a concerted action which rose above trade and craft lines. In the third place, the industrial revolution brought about by steam power and the factory system was making swift headway in creating great cities. It added rapidly to the number of industrial workers and created closer associations among them. In the fourth place, the idea was being advanced that the hours of labor should be fixed universally at ten per day by legislation rather than by the painful method of strike.

The movement among workers seeking to improve their status by political action spread to many leading industrial communities. In Philadelphia a number of craft unions formed the Mechanics' Union of Trade Associations in 1827. This city-wide group soon began to nominate and elect candidates to "represent the interests of the working classes" in the Philadelphia city council and the Pennsylvania State Legislature. Local labor parties organized by workers also sprang up in many States.

Early Efforts of Unions in Politics

Political programs, supported by 50 or more labor papers, included such demands as the following: the 10-hour day, restriction of child labor, abolition of convict labor competition, free and equal public education, abolition of imprisonment for debt, exemption of wages and tools from seizure for debt, the right of mechanics to file liens on property to secure payment of their wages, and the abolition of home and factory sweatshops.

With the rise of political organizations of workingmen, which soon assumed the typical forms of American political parties—ward and county committees, and conventions—much of the strictly economic activity of the trade-union movement was discontinued, and the number of organizations along craft lines declined.

For a short time, these labor organizations were successful in electing their candidates to various public offices, but in general, they failed to attain their aims. Nevertheless, they called the attention of the regular political parties and the public at large to the social and

economic inequalities experienced by workers, and by so doing helped to shape the course of much future legislation. Eventually, State legislatures prohibited imprisonment for debt, enacted the 10-hour day for women and children, and laid the foundation of the American free public school system.

In the early 1830's the interest of workers in reform movements and political action declined. To offset the rapidly rising prices between 1835 and 1837, they turned with renewed vigor to the organization of craft or trade-unions. By 1836, for example, over 50 local unions were active in Philadelphia and New York City.

City Centrals and National Unions

Workers also organized craft unions in other cities, such as Newark, Boston, Cincinnati, Pittsburgh, and Louisville. This rapid growth led to the formation of union groups on a city-wide basis. These "city central" organizations, or "trades' unions," as they were called at the time, gave primary attention to the discussion of problems of common interest and to the promotion of union-made goods.

Organization of union groups beyond a single local area was first tried in 1834 when city central bodies from seven cities met in New York to form the National Trades' Union. Later, in 1835 and 1836, the cordwainers, typographers, combmakers, carpenters, and hand-loom weavers endeavored to set up country-wide organizations of their separate crafts. These experiments in federation, however, did not withstand the financial panic of 1837 and the period of depression and unemployment which followed during most of the forties.

The Era of "Utopianism"

As the depression took its toll of local as well as national unions, workmen in many places turned their efforts toward forming producers' and consumers' cooperatives. Others were attracted by various schemes for cooperative communities stimulated by the "utopian" idea spread by the followers of the French Socialist Charles Fourier, by the English reformer Robert Owen, and by many other intellectuals of the period.

Community ownership of land and productive tools, like that tried in the well-known Brook Farm venture in Massachusetts and at the New Harmony colony in Indiana, was urged as the solution to poverty, unemployment, and the other social and economic ills besetting labor. Although widely discussed in labor groups, these schemes received little direct support from workers themselves. They did, however, divert workers' efforts from union activities into disputes over political and economic theories.

In this period, also, the "homestead movement" was born. In its simplest term it was a proposal that the Government give plots of undeveloped public land to persons who wished to settle and cultivate them. This movement, in the words of the labor historian, Selig Perlman, in *A History of Trade Unionism in the United States*, was a demand that the Government "open an escape to the worker from the wage system into self-employment by way of free land," and it dominated American politics during the fifties and sixties.

By the late 1840's industry had revived, labor was in great demand, prices were climbing upward, and trade-unions

(*Continued on page 27*)

New Twin Screen Drive-In Has Duplex Projection Room

ALEXANDRIA, Louisiana's new Joy Twin Drive-In is unique in that it has two screens—one at either end—and a four-mechanism projection room that projects two different pictures simultaneously and in opposite directions. It has a capacity of 850 cars, plus 200 seats located at the concession building.

As shown in the illustration below, the box office is centrally located. Patrons entering may choose which of the two features they want to see first. Intermissions, however, are staggered in order to minimize congestion at concession counters and exits.

The projection room faces both ways and is equipped with two complete projection and sound installations, one for each screen. Both operate simultaneously, of course. Both installations are almost identical, consisting of Motiograph AA mechanisms and Motiograph sound throughout. The only difference is that where one includes two Motiograph 90-ampere lamps and one 125-ampere Motiograph generator, the other system has two Strong Mighty 90 lamps powered by two Strong rectifiers. Each of the two screens measures 40 x 57 feet, and the throw in each case is 487 feet.

Projectionists are provided with their own toilet facilities and with a shower. By arrangement with Alexandria, Local

400, the Joy Twin is operated by two projectionists, who are pictured here. Above left is D. L. Coker with W. Martin Lipscomb, business representative of Local 400; above J. D. (Jerry) Clark. All equipment was installed by members of Local 400, under guidance of Harold Ballum, engineer for Hodges Theater Supply of New Orleans.

Owner of the Joy Twin is a syndicate including, among others, Joy N. Houck, A. J. Rosenthal and Bernie Rosenthal, Jr.

16-mm

BECAUSE EXPANSION OF 16-mm ACTIVITY PROVIDES INCREASING FIELDS OF EMPLOYMENT FOR SKILLED PROFESSIONAL PROJECTIONISTS IN Tv STUDIOS AND NON-THEATRICAL SHOWINGS, AS WELL AS ENHANCED POSSIBILITIES OF PERSONAL BUSINESS VENTURES, THIS NEW DEPARTMENT OF IP WILL APPEAR MONTHLY HEREAFTER.

16-mm Audio-Visual Show Draws Thousands

Narrow-gauge film users and producers, and equipment manufacturers, stage multiple-organization convention and trade show displaying broad variety of items for entertainment, educational, religious, industrial and business use.

THOUSANDS of projectionists, educators, churchmen, showmen and salesmen gathered in Chicago July 31st to August 5th to see the displays of 16-mm and other "audio-visual" equipment at the Hotel Sherman, and to attend the conventions of national audio-visual organizations simultaneously held there.

Four of these national organizations, made up of users or suppliers of 16-mm and related equipments are: National Audio-Visual Association (NAVA), Educational Film Library Association (EFLA), Catholic Audio-Visual Educators (CAVE), and Industrial Audio-Visual Association (IAVA). Other groups holding concurrent meetings included the Committee on Radio and Recordings of the Department of Audio-Visual Instruction of the National Education Association (NEA), the Film Council of America, the Association of Chief State School Audio-Visual Officers, and the State Directors of Audio-Visual Education.

Audio-Visual

"Audio-visual" is the term used to group still or motion pictures, three-dimensional objects, and sound records recorded on film or otherwise, when these are used for non-entertainment purposes related to education, religion, training, advertising or sales. It embraces all motion picture projection so used, including 35-mm, 16-mm and 8-mm sound and silent films. Sixteen-mm sound films predominate heavily. It also embraces projected slides and slide-strips. The latter usually consist of frames on 35-mm stock, projected singly and in slow succession; the still image thus projected may be as small as the page of a book, or fill a large screen. (Salesmen project book-size images to interest or inform their prospects; using tiny, portable, battery-powered projectors, a number of which were on exhibit.)

One product on display, is a device to test audience reaction to anything, including a motion picture. Called the Group-Thinkometer, it consists of a meter box, containing a meter and dry cells, and from 4 to 50 cables terminating in switches. These switches are distributed among the audience which is instructed to press them when interested, or bored, or pleased, or displeased, according to the reaction to be tested. The meter's dial is calibrated to show how many switches are closed at any given moment; and its needle moves back and forth along the dial as switches are closed or released. This device is used by educators and others to edit film; sequences to which the test audience gives a "disinterested" reaction being eliminated or reduced as much as possible.

Other exhibits included a wide variety of perforated and solid screens, portable and non-portable, for projection of still and motion pictures in all sizes from book-page up to theatre dimensions. Da-Lite Screen Company alone unveiled four new screen models, including one intended for stereo projection (with the audience wearing stereo spectacles).

The largest single exhibit appeared to be RCA's, presenting among other items a number of varieties of that company's Model 400 Senior and Junior 16-mm sound projector. (IP for June, Page 22.)

Approximately half of the booths were occupied by manufacturers, not of equipment, but of 16-mm and 8-mm films, and of slides and slide-strips. Many of these displayed bulky catalogs listing their products; these in some cases were given away, but other producers sold theirs. Two of the catalogs sold were products of the Library of Congress which list and describe copyrighted films and filmstrips.

Censorship troubles afflict narrow-gauge films as well as the theatre, and were the subject of three resolutions recommended to the EFLA. One called for adoption of the American Library Association's Bill of Rights as it pertains to film censorship; another for cooperation with Film Council of America in implementing that bill of rights, and a third requested NEA's bibliography of those who are considered to have been attacking freedom of education.

NAVA devoted a closed panel discussion to specific problems of entertainment films, including a proposed code of ethics for the 16-mm entertainment business. This panel also considered: "What can we do as an industry, and through our Association, to create new business in the (16-mm) entertainment field?"

The IAVA took up, among other matters, "What can be done to develop a set of recognized standards and costs of projection service for business and industry?" Also: "The problem of special equipment for business conventions and exhibits."

Floyd E. Brooker, of the Mutual Security Agency, told the EFLA some of the conclusions he drew from a recent eleven-week round-the-world tour to study audio-visual practices and needs. Audio-visual aids, he found, were exceptionally helpful in health education and other fundamental education in areas where illiteracy or language barriers retard other methods of communicating information. The Mutual Security Agency, he revealed, has sent a thousand technical training films to Europe, for translation and distribution; and is encouraging local production of a-v films and filmstrips in Italy, Greece and Turkey.

Organizations Participating

NAVA is the trade association of the audio-visual field. Its membership numbers approximately 600 manufacturers of a-v equipment, producers of a-v films and other materials, and a-v dealers. The gathering at Chicago was its seventh annual convention and trade show. CAVE, however, was participating for the first time, this being the first meeting of the kind for Catholic educators in the field of a-v teaching aids. EFLA was organized in 1943. It distributes educationally-produced films and publica-

High Speed Movie Technique "Magnifies Time"

A new 15-minute, 16-mm sound motion picture which provides a concise graphic demonstration of the ability of a high-speed motion picture camera to "magnify time" has been announced by Eastman Kodak Co.

The film "Magnifying Time with the Kodak High-Speed Camera" begins with the statement that time is no longer bound by the clock; that time control is now possible with a high-speed motion picture camera. To prove the point, and to show various applications of the camera, the film proceeds to illustrate how every movement from dropping an egg in a frying pan to the implosion of television tubes can be slowed down to a snail's pace for leisurely study and analysis. Sequences in this series include motion picture studies of explosions, the operation of relays, studies of cam action, the performance of a solenoid-operated curtain, and vacuum coating of metals and plastics.

During the course of the demonstration the film points out that since the Kodak High-Speed Camera exposes 100 feet of motion picture film in about 3 seconds—while the film whizzes along at approximately 50 miles an hour—time is multiplied by a factor of about 200 and as a result any movement or action which is too fast for the eye to follow in the normal course of events can be readily studied on high-speed film. This will provide the engineer or researcher with the rare advantage of seeing what really happens when things take place "quick as a wink." The camera, the film points out, literally "sees into the invisible."

"Magnifying Time" will be available on loan without charge to businesses, industries, organizations, and schools interested in the subject of high speed movies. Bookings can be arranged by addressing Camera Club and School Service, Eastman Kodak Co.

AUDIO-VISUAL SHOW

(*Continued from preceding page*)

tions and acts as an information service on educational films; its membership includes colleges and universities, public libraries, church groups, and film producers and distributors. IAVA's members are the a-v department heads of industrial firms that use a-v materials and equipment for sales, advertising, employe training and other purposes—companies such as Shell Oil, Swift, Illinois Bell Telephone Co., and the like.

Manufacturers Participating

Manufacturers exhibiting, and the products they displayed, included the following among others:

Ampro Corp.: 16-mm Premier-30 projector, magneto-optical recording 16-mm projectors, tape recorder.

Audio-Master Corp.: Tape recorders, slidefilms, etc.

Audio-Visual Supply Co.: rewinder, filmstrip cleaner, electric timing device.

Automatic Projection Corp.: 35-mm slide-film projectors.

Bausch & Lomb Optical Company: slide projectors.

Bell & Howell Co.: 16-mm sound projectors and related equipment.

Califone Corp.: Sound systems, tape recorder.

Compco Corp.: reels, cans, shipping cases, slide-making material.

Crestwood Recorder Corp.: tape recorders.

Da-Lite Screen Co.: screens and tripod screens.

De Vry Corp.: 16-mm sound projectors, including the A-N model.

Du Kane Corp.: slidefilm projectors, filmstrip projectors, tape recorders.

Eastman Kodak Co.: 16-mm projectors and cameras, motion picture accessories, slide projectors.

Electro-Chemical Products Corp.: Anti-static film cleaner and conditioner.

Electro Engineering and Manufacturing Co.: slidefilm equipment.

Forway Industries, Inc.: 16-mm sound projectors, film editing device.

FR Corp.: 35-mm slide projection viewer.

GoldE Manufacturing Co.: slide projectors, slide changers, accessories.

Hamilton Electronics Corp.: public address equipment.

Harwald Co.: the Group-Thinkometer, film inspection device, slide projector.

Masco Electronic Sales Corp.: tape recorders, public address equipment.

O. J. McClure Talking Pictures: slidefilm projectors, public address equipment.

Monson Corp.: tape recorder and accessories.

Movie-Mite Corp.: 16-mm sound projector, 8-mm magnetic sound projector.

Newcomb Audio Products Co.: transcription players.

Newmade Products Corp.: complete film library equipment.

Paillard Products, Inc.: stereoptical projector with magnetic sound.

Pentron Corp.: tape recorders and players, mike mixer, accessories.

Radiant Manufacturing Co.: tripod, wall and ceiling projection screens.

RCA: 16-mm sound-silent motion picture projectors, magnetic recorder-projector, a-v accessories.

Reeves Soundcraft Corp.: magnetic recording tape and "magna-stripe" for addition to silent prints.

Rek-O-Kut Co.: disc recorders, high-fidelity record players, variable-speed record players.

Spindler & Sauppe: slide projector with remote control, projection screen.

Standard Projector and Equipment Co.: filmstrip and slide projector.

Strong Electric Corp.: AC arc slide projector for large screens.

Television Associates: projection screens.

Three Dimension Co.: filmstrip projectors.

Victor Animatograph Corp.: 16-mm sound motion picture projectors; magnetic sound attachment for same, accessories.

Viewlex, Inc.: slide and filmstrip projectors, combinations of same, automatic and remote control variations of same.

Vita-Lite Screen Co.: glass and plastic moulded screens.

Wallach and Associates: disc and tape record cabinets.

Webster Electric Co.: tape recorders.

Webster-Chicago Corp.: tape and wire magnetic recorders.

Westinghouse Electric Corp.: projection lamps and photographic lamps.

New M-G Shown at IA Meet

Among features of the IATSE 41st Convention at Minneapolis was the demonstration, by Jack Behlke of Local 110, Chicago, of a new Motiograph motor-generator designed for one-kilowatt arc lamps. Behlke put the device on display at a local hotel.

The equipment consists of a control cabinet and M-G unit. The cabinet mounts an on-off switch; two ammeters, one for each lamp; and two rheostats, one for each lamp. The M-G proper consists of a 4 hp, 220-volt, single phase 60 cycle ac driving motor, and two dc generators, one shafted at either side of the motor. The generators are rated at 50 amperes, and compounded to need no ballast. Regulation is claimed to be exceptionally good in cases of unfavorable line voltage variation. Floor space required is 36 inches x 14 inches; the M-G stands 18 inches high and weighs approximately 240 pounds.

Magnetic Tracks for 8-mm Prints

Reeves Soundcraft Corporation, manufacturers of "Magna-Stripe" magnetic tracks for use on 35-mm and 16-mm prints, have now brought out a similar track that can be bonded to 8-mm silent prints. By recording any sound he pleases on that track the owner converts his silent 8-mm prints to sound. Cost is 3½ cents per foot.

Best Devices Moves

Best Devices Company, Inc., manufacturer of projection port fire shutters and of carbon savers, has moved to its own new factory building at 10921 Briggs Road, Cleveland, Ohio. John MacNellis, who recently acquired ownership of the organization, announced the change.

Eastman Kodak's 25 and Pageant 16-mm Projectors

UNIQUE in many ways in the 16-mm field the Eastman Kodak Model 25, Figure 1, can be operated either with an incandescent light source (as shown) or with an arc light source. It has a Geneva cross intermittent movement in place of the more common claw intermittent—but a Geneva cross with eight instead of the usual four points; and has five separate drive motors instead of one. Other unusual features include a single-blade shutter running at double normal speed (the same blade serving both for cut-off and balance); turret-mounted projection incandescents for instant changeover in case of burnout; and coiled-spring coupling to the more important drive motors in place of direct shaft-coupling.

The Eastman Model 25 was not designed to compete in the lower-priced 16-mm field but rather to compete in quality of presentation, so far as possible, with the very finest 35-mm projection.

Electrical Circuits

Some of the manufacturer's performance specifications are:

Projection: horizontal unsteadiness, less than 0.00025 inch; vertical unsteadiness, less than 0.0005 inch. Illumination, shutter running, no film: tungsten, 450 lumens; arc with heat glass in place for black-and-white film, 2000 lumens; without heat glass for color film, 2500 lumens. Screen width: up to 22 feet.

Sound: signal to noise ratio, 55 db; flutter, less than 0.2%; intermodulation distortion, 5% including scanning beam and amplifiers. Sound power: up to 30 watts.

Incandescent projection utilizes 1000-watt T-12 lamps, mounted base-up in the lamp turret. A lever at the top of the projector is used to rotate the turret, bringing the spare lamp into action, instantly, in event of failure.

Arc projection utilizes a lamphouse and tube-type rectifier made for the Eastman Model 25 by Strong Electric Company. The lamp burns 45 amperes at 30 volts and is trimmed with a 7-mm x 12" Suprex positive and 6-mm x 9" Orotip C negative.

The intermittent movement is driven by its own, 1440 rpm synchronous motor, which is not burdened with any other duty whatever. The motor is coupled to the movement by a coiled spring, not rigidly. Two off-center driving elements, known as "accelerators," are also interposed between movement and motor. The result is a pull-down acceleration of 57 degrees instead of the more usual 135 degrees.

The other sprockets, and the shutter, comprise a separate mechanical assembly of their own, vibration-isolated from the intermittent; however shutter and intermittent must of course be phased to each other. Therefore, also, special gears mechanically link the two assemblages during the starting period; as the two motors come up to speed and to phase, these gear teeth float apart. The shutter motor operates at exactly twice the speed of the intermittent motor—namely, 2880 rpm. The shutter has only a single blade, which intercepts the light twice each frame. This arrangement is another step toward attaining the absolute maximum possible illumination. The shutter-sprocket assembly, like the intermittent movement, is spring-coupled to its driving motor.

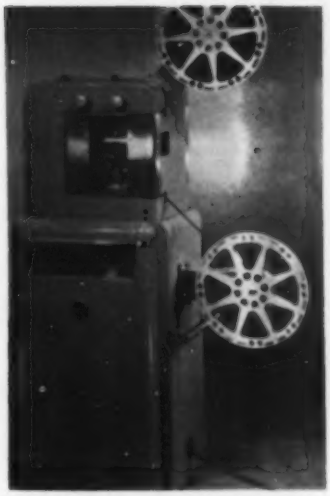


FIG. 1. Model 25 16-mm projector, with 8-point Geneva cross intermittent movement and single-blade shutter, as used for incandescent projection.

The take-up spindle, the rewind spindle, and the cooling blower, each have separate motors of their own, making a total of 5 motors in all. The schematic of these arrangements is shown in Figure 2, in which the "vertical" motor is the 2880 rpm unit that drives the shutter-sprocket assembly.

Performance Specifications

The amplifier (with the exciter lamp power supply) is plugged in, during installation, to one of the two "utility" outlets shown in Figure 2; it may also, depending on local circumstances, be plugged into an independent ac source.

The power supply is equipped with a full-wave stack rectifier, its output filtered by an Altec-Lansing TMQ-501 inductor and four 3,000 microfarad capacitors. It delivers a 6-volt dc output to the exciter lamp.

Amplifier arrangements comprise two units, a pre-amplifier and power amplifier. The former derives its power supply from the latter, contains automatic voltage stabilization and two stages of audio. The power amplifier contains two stages of audio amplification, succeeded by a cathode-follower phase-inverter stage and a push-pull output stage.

Operating power is derived from a full-wave rectifier tube, 5U4G. Output may be fed to any of a number of speaker arrangements, according to local require-

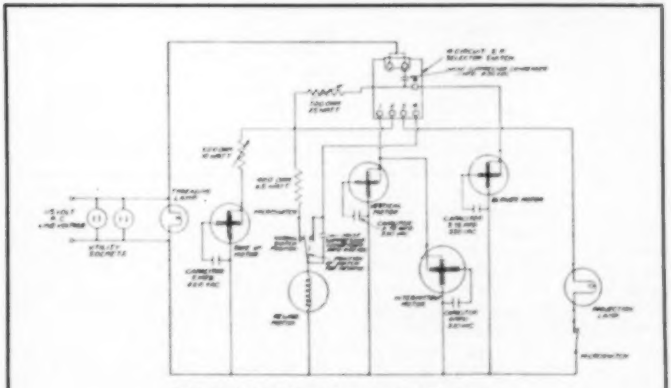


FIG. 2. Model 25 projector schematic circuit.

FIG. 3. Pageant 16-mm projector, with claw-and-cam intermittent movement and incandescent projection.

ments, including Altec-Lansing theatre-type speakers. Provisions are included for input from microphone or other auxiliary sound source; for separate control of low frequency and high frequency volume; overall volume control, and silent operation.

Service can be obtained from Altec Service Corporation.

* * *

The Eastman Kodak "Pageant" 16-mm sound projector (Figure 3) is an incandescent-illuminated, claw-intermittent portable unit, with an 8-inch loudspeaker in a removable section of the carrying case. Spare reel, reel arms, power cable, speaker cable and spare projection lamp are also fitted inside the same case. The unit as a whole may be plugged into either an ac or dc 110 volt line.

The projection lamp may be either 750 or 1000 watt, T-12; nothing higher than a 750-volt lamp, however, should be used with dc. The motor is a series-wound universal type. Amplifier and exciter lamp circuits are ac-dc, with selenium stack rectifiers. Amplifier gain is provided by three triode stages followed by phase inverter and push-pull pentode output, to deliver a rated maximum of 7 watts to the 8-inch speaker. Inverse feedback is obtained from an independent secondary on the output transformer. Current to the 7-volt, 0.2 ampere T-5 exciter is supplied via a 250 ma. selenium rectifier, in series with the amplifier tube filaments. Amplifier plate power is drawn from the 110-volt line via a push-pull pair of 75 ma. selenium rectifiers.

Controls provided include motor and lamp switches; silent-sound speed and rewind levers; volume and tone control, and a "fidelity" lever that affords effortless refocussing of the exciter lamp to match the type of sound track. Motor speed is automatically controlled by a governor that short-circuits a 100-ohm series resistor as required.

The amplifier and loudspeaker circuits of the Pageant sound projector can be used to accompany silent prints with either microphone comment or phono music; or they may be used without film as a pa system. Provision is made in the amplifier for high-impedance microphone input; and Eastman Kodak also supplies a phono adapter, consisting electrically of a 0.1 mfd. condenser and a 1.0 megohm resistor in series.

A portable carrying-case with three speakers, which slides apart to form three individual speakers each mounted on its own baffle, is an auxiliary unit recommended for use in larger auditoriums, or in locations with unsatisfactory acoustics. By means of this auxiliary, a four-speaker set-up can be arranged to assure satisfactory audience coverage under otherwise unfavorable conditions. Two of the triplex speakers are provided with 45-foot connecting cords (and plugs), the other with a 35-foot cord, and plug.

The instruction book accompanying the Pageant projector contains thoroughly illustrated, detailed information on setting up the equipment, checking prior to switching on, rewinding, and

(*Continued on page 25*)

IA-IP Amateur Radio Bulletins

By AMOS KANAGA, W6BAA

Secretary, Local 409, San Mateo, Calif.

ALTHOUGH IP has given us a monthly column devoted to our activities, and the gesture was greatly appreciated by the gang, what I failed to realize is that editors have deadlines . . . well, we were pretty worried for this month until we received (late of course) a stack of mail from the IA radio gang. One letter from our old friend VE7ALW Merle Wilson of Vancouver Local 348 enclosed the additional fifteen QSO's he needed to qualify for the Gold Award.

Now that alone is very FB but he also told of something few of us have given much thought to, and that is the fact that some of our IA gang have already received their WN licenses. To top that he passed on the additional data that a few more were trying to get a WN license, and some of the IA men wanted to but didn't know how to go about it.

Well, brothers, I guess we just couldn't see the forest for the trees, so for the benefit of those of you who would like to become radio hams here is the pitch.

The FCC recently has made available a special license for those who want to get started in amateur radio. It is called a Novice license and is quite easy to obtain in comparison to the advanced class such as the IA men listed in IP have. For example, you only need to be able to copy 5 words of code a minute and the questions on theory are much simpler. Now this license is good for one year and allows operation on several ham bands. At the end of that time you will no doubt have enough experience to then qualify for a regular Class B license.

We have obtained from the ARRL (American Radio Relay League) some pamphlets on this Novice license telling all about it. These are available to any IA Brother for the asking, but send the request to me directly. There is also a license manual available in the form of

(*Continued on page 29*)

IA-IP "BOX SCORE"

"Worked 10 IA-IP"

No. 1	W4PKT	Marion Sanders	Local 507
No. 2	W1BVB	Don Fancher	Local 439
No. 3	W6BAA	Amos Kanaga	Local 409
No. 4	VE7ALW	Merle Wilson	Local 348
No. 5	W6FOP	George Abrams	Local 297
No. 6	W6MU	A. Houston Barnett	Local 695
No. 7	W6PFF	Frank Champlain	Local 150
No. 8	WØGSW	James Evans	Local 242
No. 9	WØSJK	O. S. Keay	Local 219

"Worked 25 IA-IP"

No. 1	W6PFF	Frank Champlain	Local 150
No. 2	W6MU	A. Houston Barnett	Local 695
No. 3	W6BAA	Amos Kanaga	Local 409
No. 4	W6DDQ	Phillip Wisdom	Local 695
No. 5	VE7ALW	Merle Wilson	Local 348

Note: If your call and name does not appear this month log received too late to verify. Send all log copies to W6BAA Amos Kanaga, 262 La Casa Avenue, San Mateo, California.

New Sound for 16-mm and 8-mm

Further increasing the usefulness of 16-mm (and even 8-mm) prints, a new method of providing them with synchronized magnetic sound, just announced by Revere Camera Company, works equally well with sound or silent prints, and does not require any modification or treatment of the print itself.

The Revere method somewhat resembles the very earliest theatre "talkies"—in which the sound was on a separate disc record that played in synchronism with the film—except that in the Revere procedure the separate record is a magnetic tape and not a phonograph disc. A stroboscopic arrangement, used both in recording and in projection, protects the synchronization. If there is sound already on the print, it may or may not be used; the separate, subsequently recorded, magnetic tape sound can be substituted; or the two can be alternated, or mixed, as desired.

Any standard tape recorder and 16-mm or 8-mm projector (any 35-mm projector for that matter, although the manufacturer does not specifically say so) can be used. The magnetic tape on which the sound is to be recorded is special, Revere Sound-Movie Tape, marked to enable the operator to observe and correct synchronism by stroboscopic striations. Each reel of tape is accompanied by a "Synchro-Reflector."

To record, a pinhole "start" mark is made in the film, which is threaded in the normal way. The Synchro-Reflector is mounted to divert a fractional percentage of the projection light to the surface of the magnetic tape. When the "start" signal appears on the screen the tape recorder is switched on and either projector speed or recorder speed adjusted until the stroboscopic reaction between the projector shutter and the markings on the tape cause the tape to *appear* to stand still. The recordist now speaks into the microphone or plays his phonograph or otherwise records on the tape whatever sound he pleases. If at any time the stroboscopic illusion on the tape appears to move, the speed controls are readjusted as necessary.

Playback procedure is identical except that the tape recorder is switched to "play" instead of record. Depending on local arrangements sound can be played either from the magnetic tape or from any track that may exist on the film, or a simple mixer circuit may be added to blend the two. The synchronized magnetic record can of course be erased, edited or re-recorded at any time.

This latest Revere development adds still a further touch of versatility to the many services already obtainable from narrow-gauge film in association with optical and magnetic soundtracks.

Clear Crisp Pictures with
SUPER SNAPLITE
f/1.9
PROJECTION LENSES

Your patrons will notice the difference! Super Snaplites give you Sharper Pictures, More Illumination, Greater Contrast and Definition.

For the Best in Projection use Super Snaplites . . . the only Projection Lenses to give you a true speed of f/1.9 in every focal length up to 7 inches.

Ask for Bulletins 207 and 209

KOLLMORGEN *Optical* **CORPORATION**
2 Franklin Avenue
Brooklyn 11, New York

"YOU GET MORE LIGHT WITH SUPER SNAPLITE"

Accepted Standards for 16-mm Projection

II

Freedom from Travel Ghost Z22.54-1946

1. Scope and Purpose

1.1 This standard describes a method of determining freedom from travel ghost in 16-mm sound motion picture projectors.

2. Definition

2.1 Travel ghost is a blurring effect seen on the screen and evidenced by vertical tails or light streaks added to the projected images of the transparent areas on the test film. It is caused by the projector shutter being out of synchronism with the intermittent mechanism, either by faulty adjustment or faulty design.

3. Test Film

3.1 The test film used for determining freedom from travel ghost shall carry a pattern of small transparent areas upon a dark background. There shall be at least six transparent areas, three of which shall be located not farther than 1/32 inch from the top of the frame and three not farther than 1/32 inch from the bottom of the frame. Four of the areas shall have their edges 1/32 inch from a side edge and either the top or bottom edge of the frame. The density of the transparent areas shall be less than 0.2 and the density of the dark background shall be greater than 2.2.

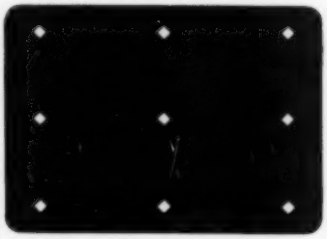


FIG. 1. Typical test pattern (X by approximately 8 diameters). This pattern, although still officially standard, is now used only for military testing and has been informally replaced, for industrial testing, by a "T" target.

3.1.1 *Standard Length of Film.* The standard length of test film shall be 100 feet.

3.1.2 *Leader and Trailer.* Each test film shall have a suitable leader, title, and trailer.

4. Test Method

4.1 A test film in accordance with 2.1 shall be projected at standard sound speed of 24 frames per second (± 2 percent) upon a white matte screen, the projected image of the projector picture aperture being of such size that a screen brightness of 10-foot lamberts is obtained with the projector shutter running, but with no film in the gate. The screen image of the test film shall be viewed from a distance equal to twice its width and the presence or absence of travel ghost noted.

400-Cycle Signal Level Test Film (Z22.45-1946)

1. Scope and Purpose

1.1 This specification describes a 400-cycle signal level test film for use in testing 16-mm sound motion picture projection equipment.

2. Test Film

2.1 *Recording.* The test film shall have an originally recorded direct playback positive variable-area sound track recorded at an amplitude of 0.048 ± 0.0015 inch. The frequency of the recording shall be within ± 8 cycles of nominal frequency.

The density of the dark portion of the sound track shall be between 1.7 and 2.0. The density throughout the length of the film shall be as uniform as is consistent with the state of the art.

The combined base and fog density, measured as visual diffuse density, shall be 0.05 ± 0.01 when measured on an integrating sphere densitometer or a polarization densitometer.

The wave form distortion of the recording shall not exceed 5 percent.

2.2 *Film Stock.* The film stock used for the test film shall be cut and perforated in accordance with the American Standard 16-Mm Sound Motion Picture Film; Cutting and Perforating for Negative and Positive Raw Stock, Z22.12-1941, or latest revision thereof.

2.2.1 *Resistance to Shrinkage.* The film stock used for the test film shall have a maximum lengthwise shrinkage of 0.50 percent when tested as follows: At least 20 strips of film approximately 31 inches in length shall be cut for measurement of shrinkage. After normal development and drying (not over + 80 F [+ 26.7 C]), the strips shall be placed at least ¼ inch apart in racks and kept for seven days in an oven maintained at + 120 F (+ 49 C) and a relative humidity of 20 percent. The strips shall then be removed, reconditioned thoroughly to 50 percent relative humidity at + 70 F (+ 21.1 C), and the shrinkage measured by an adaptation of the pin-gage method outlined in Research Paper RP-1051 of the National Bureau of Standards. The percent shrinkage shall then be calculated on the basis of deviation from the nominal dimension for the length of 100 consecutive perforation intervals given in American Standard Z22.12-1941, or latest revision thereof.

2.3 *Standard Length.* The standard length of the 400-cycle signal level test film shall be 100 feet.

2.4 *Measurement Requirements.* Each film shall be measured for amplitude of the modulation, for image density, and for combined base and fog density. The measurements shall be made at a point approximately midlength of the film and at points between 5 and 10 feet from each end. The results of the measurements shall be stated on a card furnished with each test film.

2.5 *Leader and Trailer.* Each test film shall be provided with a suitable leader, title, and trailer.

Buzz-Track Test Film (Z22.57-1947)

1. Scope and Purpose

1.1 This specification describes a buzz-track test film used for checking the position of the sound scanning beam in 16-mm motion picture sound reproducers.

2. Test Film

2.1 The test film shall have originally recorded 300-cycle and 1000-cycle signal tracks on either side of the central exposed strip as shown in Fig. 1. The position of the tracks, weave in running film on the recorder included, shall be in accordance with Fig. 1.

2.2 The central exposed strip and the exposed portions of the two signal tracks shall have a density of 1.6 + 0.4

2.3 *Film Stock.* The film stock used for the test film shall be cut and perforated in accordance with the American Standard Cutting and Perforating Dimensions for 16-Millimeter Sound Motion Picture Negative and Positive Raw Stock, Z22.12-1947 (Revision of Z22.12-1941), or the latest edition thereof approved by the American Standards Association.

2.3.1. *Resistance to Shrinkage.* The film stock used for the test film shall have a maximum lengthwise shrinkage of 0.50 percent when tested as follows: At least 20 strips of film approximately 31 inches in length shall be cut for measurement of shrinkage. After normal development and drying [not over + 80 F (+ 26.7 C)], the strips shall be placed at least ¼ inch apart in racks and kept for 7 days in an oven maintained at + 120 F (+ 49 C) and a relative humidity of 20 percent. The strips shall then be removed, reconditioned thoroughly to 50 percent relative humidity at 70 F (21.1 C), and the shrinkage measured by an adaptation of the pin-gage method outlined in Research Paper RP-1051 of the National Bureau of Standards. The percent shrinkage shall then be calculated on the basis of deviation from the nominal dimension for the length of 100 consecutive perforation intervals given in American Standard Z22.12-1947.

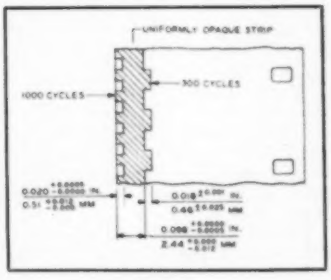


FIGURE 1

2.4 Each test film shall be provided with suitable leader and trailer, and a title or other markings to identify the film.

2.5 The standard length of test film shall be 100 feet.

16-mm Sound Projector Test Film (Z22.79-1950)

1. Scope and Purpose

1.1 This standard describes a film for qualitatively checking and adjusting 16-mm motion picture sound projection equipment and for judging the acoustical properties of the room in which the sound is reproduced.

2. Test Film

2.1 The film shall have a sound track and accompanying picture. The sound track shall comply with American Standard Sound Records and Scanning Area of 16-Mm Sound Motion Picture Prints, Z22.41-1946, and the film stock used shall be cut and perforated in accordance with American Standard Cutting and Perforating Dimensions for 16-Mm Sound Motion Picture Negative and Positive Raw Stock, Z22.12-1947, or any subsequent revisions thereof.

2.2 The test film shall contain samples selected from studio feature pictures in accordance with the American Standard for Theater Sound Test Film for 35-Mm Motion Picture Sound Reproducing Systems, Z22.60-1948, or any subsequent revisions thereof.

2.3 The assembled film shall contain picture reduced from the 35-mm sound test film, the dimensions of which shall comply with American Standard Location and Size of Picture Aperture of 16-Mm Sound Motion Picture Cameras, Z22.7-1941, or any subsequent revisions thereof.

2.4 The 16-mm release sound track shall be rerecorded from 35-mm original or release tracks through a rerecording channel, the electrical characteristics of which shall comply with current practices in the industry in rerecording 35-mm feature releases for 16-mm release.

2.5 Each film shall be provided with suitable head and tail leaders. The main title shall include the issue number of the film so that revised versions which may be issued periodically to conform to changing studio practices or to changes in the reproducing characteristic of the 16-mm sound projectors may be easily identified.

2.6 Each film shall be accompanied by an instruction sheet indicating the procedure to be used in checking and adjusting 16-mm projection equipment.

2.7 The length of the film shall be approximately 200 feet.

3. Method of Use

3.1 From a typical location in the room where the sound is reproduced, the observer should determine whether or not the frequency response characteristics of the complete reproducing system are normal by listening to the sound reproduced from the test film when the tone control is set normal and the volume control is set to reproduce the dialogue at normal sound level.

3.2 If the picture and sound quality are displeasing and the dialogue unintelligible, then either:

(*a*) The equipment should be adjusted as shown in the technical manual provided by the manufacturer, or

(*b*) The room in which the sound is reproduced is not suitable.

Methods by which these factors may be determined should be included in the instruction sheet.

PARALLAX BARRIERS

(*Continued from page* 13)

control is effected by the real or apparent position of the electron source. Either a separate electron gun is used for each independent set of elements or the beam originating in a single electron gun may be successively shifted through the proper O points. Such cathode-ray tubes can be used in multitrace oscilloscopes giving each trace a different color, or as multicolor radarscope for differentiating by color such things as moving targets, radar beacons, etc., but the most important application appears to be for color television in two-, three- or four-color sequential or simultaneous-type systems.

A large number of tricolor picture tubes are being built on this principle. At present the application of the parallax barrier principle in a cathode-ray tube represents one of the most promising solutions for an all-electronic color television viewing device.

KODAK 16-MM PROJECTORS

(*Continued from page* 22)

connection and use of accessories. Maintenance instructions cover cleaning of gate and aperture, of lenses and reflector, of sound drum and sound optics; replacing projection and exciter lamps, tubes (they can be changed with the amplifier in place), pecs and belts, and removing the amplifier.

A complete parts list is included and accompanied by an abundance of "breakdown" photographs, each labeled in detail to permit identification of each replacement part by its number. Electrical circuits are represented by both schematic and wiring diagrams of the projector as a whole and of the amplifier. Adequate electrical circuit data anent the phono adapter and the triplex loudspeaker are also included.

PHILLIPS CARBON SAVERS

Machined and Handmade

Price: $2.50 each and up

Ask Your Theatre Supply Dealer

Manufactured by

PHILLIPS, BOX 788, CHARLESTON, W. VA.

THOUSANDS OF EXHIBITORS

***with* RCA SERVICE**
and there's a reason why:
RCA SERVICE is

Prompt · Efficient · Courteous

RCA Service Company, Inc.

A RADIO CORPORATION OF AMERICA SUBSIDIARY
CAMDEN, NEW JERSEY

41ST IA CONVENTION

(Continued from page 6)

enough, in addition "we must be alert to keep out a substitution at the state or municipal level because those groups are now just waiting for the removal of the Federal tax to step in."

Benjamin Berger, President of the North Central Allied Independent Theatre Owners, stated that he had negotiated with the IA for 32 years as a theatre owner himself, and for seven years on behalf of the organization he heads, and "never had any serious trouble—never had any difficulty of any kind."

International Representative Roy Brewer told the Convention that the IA played an important part in stopping an important phase of Communist operation—an operation designed to infiltrate Hollywood in order to use motion pictures to influence world opinion.

Reverend Father F. J. Gilligan declared that Communism is bred of injustice, that in the United States labor organizations have secured a wider distribution of wealth and minimized injustice, and this is why Communism has not flourished here.

James L. McDevitt, National Director of Labor's League for Political Education, told the Convention that the Taft-Hartley act could be used to destroy any labor union in the United States by forcing expensive litigation upon it. U. S. Senator Hubert Humphrey (D.–Minn.) warned: "You will see what Mr. Taft-Hartley does to you" if there is a business recession and strike-breakers are called upon. "A law is not only what it does, but what it could do . . . not only how it is applied today but how it could be applied by a most unfriendly administration," he pointed out.

Indicative of the reputation of the IA for good citizenship extending beyond its own organizational interests is the number of speakers who saw fit to place before the delegates views on public affairs which could not possibly have any direct bearing on craft matters. Speaking of international relations, Sen. Humphrey said that the U. S. has been "the Good Samaritan of the Twentieth Century" yet the food and clothes sent abroad left no one hungry or naked here; technicians have been sent abroad yet American science keeps expanding. "We have been casting our bread on the waters, and it has been coming back a thousandfold. . . . We have fed the multitude with fishes and bread, and the more we feed, the more there is to eat."

George Grim, war correspondent and columnist with the Minneapolis Tribune, explained the situation in Korea: the enemy has never flown a bombing mission behind UN battle lines there and the UN in turn has never bombed Chinese territory. "I don't know who made the agreement, but there it is. If we were to fly over the border, they have 2300 planes to let fly at us." . . . The stall in the truce talks results from UN insistence on the rights of Communist prisoners of war, intended to counteract the impression left by older, imperialistic attitudes that regarded Orientals as inferiors. "Now our job is to try to prove to the people of the Orient and the Middle East that we believe in their individual integrity and dignity as much as our own. If you do not do that, you are going to lose. They control all the raw material, and they outnumber us . . . don't kid yourselves . . . we need them on our side. If they could ever be united under Communism, we would be clipped and done for. That is the reason for Korea, and why it is not settled."

Orville Freeman, candidate for Governor of Minnesota, addressing an audience composed mostly of persons who do not vote in Minnesota, reviewed the economic advances of the American people since 1939. Real income, taking prices into consideration has risen 41 per cent, he asserted, owner-occupied homes from 14 to 24 millions, owner-farmed farms from 56 to 78 per cent, farms with electricity from 70 to over 80 per cent. "We have built more roads and schools and hospitals than at any time in the history of this nation, and while we have done it we have fought a great war and are carrying the burden of meeting the threat of Communism and all these things are without parallel in the history of the world."

The Minneapolis and St. Paul newspapers played up the IA convention with detailed reports of the speeches and deliberations, often under two-column heads, and with "spreads" of pictures.

PICTURES UNSTEADY ?

No. E-78-L
Removable Film Gate

If your intermittent is in good condition and you are experiencing trouble in picture steadiness—look to your film gate. The New LaVezzi Film Gate with its longer pads and centrally located conical compression springs exert just the right tension to eliminate unsteadiness—is gentler on the film—and the intermittent. See this gate at your dealer or write for further information.

LaVEZZI MACHINE WORKS
4535 W. LAKE ST., CHICAGO 44, ILL.

A GOOD FILM CEMENT MAKES A GOOD SPLICE

USE ETHYLOID Double Action FILM CEMENT AND YOU USE THE BEST
ETHYLOID makes hard to splice safety film EASY
ETHYLOID works FASTER—HOLDS and DOES NOT CONGEAL
ALL THEATRE SUPPLY DEALERS SELL ETHYLOID
Made in U.S.A. by
FISHER MANUFACTURING CO.
Manufacturing Chemists
1 Salter Pl., Rochester 13, New York

NEVER HAS Economy BEEN SO ESSENTIAL AS NOW!

SLOW BURNING
SAVINGS IN POWER CONSUMPTION
SAVINGS IN MAINTENANCE

ECONOMIZE WITH Lorraine Carbons

Lorraine CARBONS, INC., BOONTON, N. J.

THE AMERICAN LABOR MOVEMENT

(Continued from page 18)

once more showed signs of activity. Workingmen again became interested in establishing rules governing apprenticeship, minimum wages, control over methods of payment, initiation fees, dues, strike benefit funds, union hiring procedures, the closed shop, and the exclusion from membership of all persons not working at the trade.

As industries spread, new locals were formed and by 1854 most important trades showed some degree of organization in the larger cities. Many of these unions collapsed only to be promptly revived and crushed again in 1857 in another downward sweep of the business cycle.

During the 1850's several national unions were founded. The printers' union held a national convention in 1850. By 1859, the stonecutters, hat finishers, molders, machinists, and locomotive engineers also had created national organizations. The decade was marked also by many strikes which, at one time or another, involved almost every known craft and the majority of American cities. Collective bargaining between unions and management, however, was slowly becoming more prevalent in several leading trades.

By 1860 there was a definite trend toward higher wages and shorter hours for workers. Adequate data are lacking to prove that this trend was a direct result of union activity. There are, however, scattered bits of evidence which indicate that the combined efforts of workers were responsible for at least a part of the improvement in working conditions.

For example, a letter written by President Martin Van Buren in 1840 to certain political inquirers states that: "The ten-hour system, originally devised by the mechanics and laborers themselves, has by my direction been adopted and uniformly carried out at all public establishments." A report of the Massachusetts Legislature for 1850 also tells that "the mechanics and laboring people * * * have established by mutual arrangement with their employers the 'ten hour system' of labor."

Specifically, the workday, often from sunrise to sunset early in the century, was shortened to 10 hours for most skilled artisans in the large cities by 1850. At this time factory workers were beginning to work from 11 to 12 hours a day. By 1860, the average workday for nonagricultural employees was estimated at 11 hours, while the building trades averaged about 10 hours. Wages in 1820 which ranged from 75 cents to $1.25 a day for common labor, depending upon the locality and season, were from $1 to $1.25 a day in 1850. Wages of more skilled artisans and mechanics in the cities similarly advanced from $1.25 and $1.50 a day in 1820 to between $1.50 and $2 or more by 1860.

Emergence of National Unions

The armed conflict between the Northern and Southern States (1861-65) required large quantities of munitions and other factory goods. Prices rose, profits were large, and many new industries were started during this period of civil war. New railroads brought the country closer together. Factory goods from Massachusetts, New York and other Eastern States were shipped by rail to the West. Other factories were built in the cities emerging along the Great Lakes and down the Mississippi Valley.

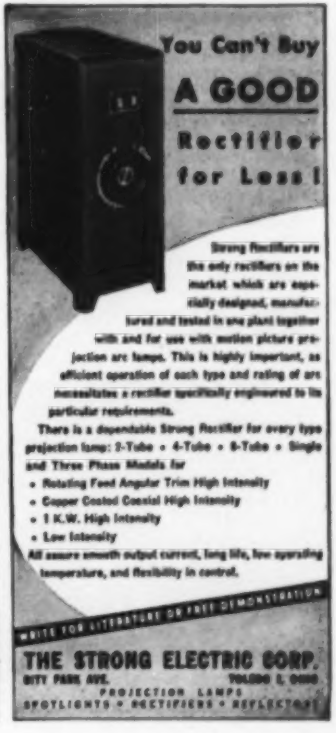
Unions sought to organize the skilled workers employed by these new enterprises. In 1863 there were approximately 80 local unions in 20 Northern States. By 1864 these States had almost 300 local unions. City centrals (local federations) followed soon after the organization of local unions. A short-lived effort toward a country-wide labor federation was made in 1864 when several of these city centrals established the International Industrial Assembly of North America. National and international unions[1] developed more slowly but steadily year by year, with 13 appearing between 1861 and 1865. The unions formed in these years became relatively strong and permanent organizations which in a few cases (the plasterers, cigar makers, bricklayers and masons) have continued to the present day.

The 15 years following the Civil War was an important formative period for the American labor movement. During 2 cycles of economic recession and revival, the period saw the rise of 14 new national unions. Union membership rose to 300,000 by 1872, and then dropped to 50,000 by 1878. Three unsuccessful attempts were made to unite the various craft organizations into national labor federations. This period also marked the rise of the 8-hour-day movement and the first signs of the long, bitter, and sometimes violent industrial warfare which characterized the struggle of American unionism for recognition and survival.

Establishment of the National Labor Union in Baltimore in 1866 was a response to a growing demand for unification of labor groups throughout the country. Basically a loose federation of city centrals, it included also national and local unions and various social reform organizations. Although one of the purposes of its founders had been to encourage industrial peace through the promotion of collective bargaining, the National

[1] Unions first called themselves "internationals" when some of the affiliated locals were outside the United States, usually in Canada. Today, the terms "national unions" and "international unions" are used interchangeably.

ON THE
NEW YORK
SKYLINE...
The Hotel
HOLLAND
on 42nd St.
Just West of Times Square
480 airy rooms with private Baths and Showers. Coffee Shop and Bar. Attractive Roof Gardens. Free radio. Television - Swimming Pool.
21-Story Fireproof Building
351 West 42nd St., New York 18, N. Y.
Circle 6-4700
FROM
$3.50 SINGLE
$5.00 DOUBLE


You Can't Buy
A GOOD
Rectifier
for Less!
Strong Rectifiers are the only rectifiers on the market which are especially designed, manufactured and tested in one plant together with and for use with motion picture projection arc lamps. This is highly important, as efficient operation of each type and rating of arc necessitates a rectifier specifically engineered to its particular requirements.
There is a dependable Strong Rectifier for every type projection lamp: 2-Tube • 4-Tube • 6-Tube • Single and Three Phase Models for
• Rotating Feed Angular Trim High Intensity
• Copper Cooled Conical High Intensity
• 1 K.W. High Intensity
• Low Intensity
All assure smooth output current, long life, low operating temperature, and flexibility in control.
WRITE FOR LITERATURE OR FREE DEMONSTRATION
THE STRONG ELECTRIC CORP.
CITY PARK AVE. TOLEDO 1, OHIO
PROJECTION LAMPS
SPOTLIGHTS • RECTIFIERS • REFLECTORS

Labor Union soon veered from "pure" trade-unionism. After first concentrating on the 8-hour-day movement, it later tried to stimulate a revival of labor interest in producers' cooperatives.

The driving personality behind the NLU was William H. Sylvis, of the molders' union, who believed in cooperation as a means of freeing workers from the "control" of capitalism. The example of cooperative production undertaken by Sylvis' own union was followed on a limited scale by others, such as the bakers, shipwrights, machinists, tailors, and printers. Because such cooperative enterprise required capital and credit, the National Labor Union was prompted to support the various politically inclined farm groups in the "Greenback" movement which favored large issues of paper money and easy credit at low interest rates.

The year 1872 saw the end of the National Labor Union after its brief and rapid evolution from trade-unionism to a body which sponsored cooperatives and supported political groups. The National Reform and Labor Party, which it sponsored in 1872, failed to survive even one election, and by the end of the seventies few of its cooperatives remained.

However, the emphasis which the NLU had placed on State and Federal legislation had borne some fruit. In 1868, Congress established an 8-hour day for Federal employees, although the struggle still continued in industry. A Government bureau of labor, which had been advocated by the NLU, was provided by law in 1884. Originally named the United States Bureau of Labor, this Federal agency evolved into the present Bureau of Labor Statistics of the United States Department of Labor.

Industrial Strife

In 1873 and again in 1876 several of the leading craft unions attempted unsuccessfully to revive interest in a federation based on a strictly trade-union program. Trade-union membership, meanwhile, was being seriously reduced by a new economic depression. Industrial workers were involved in a series of violent strikes and lock-outs which their organizations were financially too weak to endure. The cigar makers, textile workers, iron-workers, coal miners, and others fought bitterly against wage reductions.

In 1877 the railroad strikes, which originated in Pittsburgh but spread throughout the country, brought in their wake riots, martial law, intervention of State and Federal troops, and some fatalities. A notorious secret association, known as the "Molly Maguires," gained control of lodges of the Ancient Order of Hibernians in the anthracite regions of Pennsylvania. The product of the distress and poverty of this period, the "Molly Maguires" used terroristic methods against employers and strikebreakers. This group was finally broken up by State authorities with the arrest and conviction of several ringleaders who were charged with a series of murders.

Despite the failure of workers to win their immediate objectives, this turbulent period brought a growing recognition of the Nation-wide significance of the labor movement and of the social and economic ills which it was attempting to remedy. Prof. Selig Perlman observed that the experience of these years "nationalized" the labor movement, developing within it a consciousness of solidarity and common purpose. For the first time, also, unskilled workers—on the railroads, in the mines, in the textile mills—played a significant role in industrial conflict and the organized labor movement was no longer identified exclusively with the skilled groups.

Improvement in economic conditions was accompanied once more by the appearance of new locals of skilled workers and the formation of new city centrals, few of the old having survived the depression. Some 18 national unions had survived; 9 others were soon established. By 1885, total union membership again reached the 300,000 level in spite of the economic recession beginning in 1883 which had brought on a wave of strikes against wage reductions.

During the union-employer struggle of this decade the labor movement itself became the scene of a decisive contest over its future structure. The issue was whether a Nation-wide organization of labor should be based upon the direct affiliation of local unions and city centrals cutting across trade lines, or whether a national federation should be based primarily on existing trade or craft unions. The former approach, which had already been tried unsuccessfully several times, was championed by the Knights of Labor, while the latter was favored by the American Federation of Labor.

(TO BE CONTINUED)

Fit Para Booths for Stereo

Special provisions will be added to the projection rooms of the Paramount theatres in Los Angeles and Hollywood to permit inexpensive operation of a three-dimensional feature planned to open in both houses about the middle of October. The process requires simultaneous operation of two projectors, and a total of four projectors would therefore be needed if changeover were carried out in the normal manner. To eliminate this cost, the two existing projectors will be fitted with 5,000-foot reels, permitting continuous operation for more than 40 minutes, and the 90 minute feature will thus be shown with only one interruption "while the operator changes reels." The audience will wear polaroid spectacles.

Film-Weld
TRADE MARK
Successor to Film Cement

• The NEW, improved, positive method of permanently patching all types and makes of film—8mm., 16mm., 35mm., Trucolor, Technicolor, Kodachrome, Nitrate and Safety Film.

Used and endorsed by Projectionists in countless theaters.

specifically for *lasting* Patches.

ESSANNAY ELECTRIC MANUFACTURING CO.
1438 North Clark Street Chicago 10, Illinois

Wenzel's *New*
Automatic Enclosed
REWIND
PRO-62

Manufacturers of:
Projectors, Sound Heads, Bases, Magazines, etc.

WENZEL
PROJECTOR COMPANY
2505-19 S. State St., Chicago 16

EQUIPMENT & SUPPLIES
For EVERY Theatre Need!
NATIONAL
THEATRE SUPPLY

Bausch & Lomb Welcomes Inventive Ideas

Following is a condensation of the booklet: "Bausch & Lomb Policy Covering the Consideration of Inventions and Ideas." Interested readers can obtain the complete booklet free from Patent Bureau, Bausch & Lomb Optical Company, Rochester 2, N. Y. The gist of it is reproduced here.

THE Bausch & Lomb Optical Company welcomes the opportunity of receiving and examining suggestions and inventions developed by inventors outside of its organization. It is desirable, however, that the disclosure of such suggestions and inventions be made in a formal manner so that they may be considered in a fair and friendly spirit, while still affording mutual protection to all parties.

Our own engineering department is continuously working on the development of new devices and instruments in the optical field and many inventions in that field are also submitted to us by persons outside our organization. If an inventor submits to a concern an idea which has previously been worked out by its own engineers but has not been commercialized, it is conceivable that he might doubt the integrity of the concern if it informed him that it had previously worked out the invention which he had submitted. For the mutual protection of all parties, we have, therefore, adopted the procedure outlined herein.

We wish to emphasize that it is our desire that an inventor fully protect his idea to his own satisfaction before submitting it for our consideration. Hence, we prefer that an inventor either file an application for patent or obtain a patent on his idea before submitting it to us. We realize that this is not always possible or feasible and, if such is the case, we suggest that the inventor make a written disclosure of his invention in duplicate, sign and date both duplicates, and also have them signed and dated by one or more persons to whom he has explained it. One of the duplicates can then be submitted to us.

Such a written description does not of itself afford patent protection, but it would be of use in proving priority of invention should the occasion arise. There is much less chance for misunderstanding and controversy if it is clearly understood that any rights which the inventor may have are only such as may be subject to exclusive ownership under the patent laws.

If an inventor desires to submit an idea, the preferred procedure is to send us a written disclosure in accordance with the above-mentioned terms. If the written description and sketches are clear and ample, models are not necessary, though at times they are helpful in supplementing the written disclosure and, if sent, will be returned to the inventor.

Sometimes a person may have an idea or suggestion which, while having some merit, would not be patentable. Such ideas would generally have only a very nominal, if any, value, since they could be copied freely by competitors. Similarly, advertising schemes, slogans, and business methods probably could be used in substantially the same form by competitors. We will consider such suggestions and ideas only with the understanding that we are to appraise their value and decide what, if any, compensation is to be paid.

To such ideas and suggestions as may be submitted under the conditions outlined herein we will endeavor to accord the fair treatment which has always characterized our relations with others.

IA-IP Ham Radio Bulletins

(*Continued from page 22*)

a simple course. However there is a small charge for these and they must be obtained directly from the ARRL-Hartford, Conn.

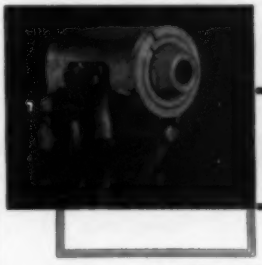
We are quite enthusiastic about this because so many of our IA men have always fooled around with radio, even in the old days when a lot of us built the first sets. So the bug is probably still alive in a lot of us who have always wanted to get on the air and either rag chew or work DX. Here is the chance,— let's take advantage of it; in any case the course cannot help but polish up a lot we already know and even help us in our own craft. Send me a card if you want the full dope; you will get a prompt reply.

Here and There: W6 Peter Fuzzy Fuzzy kid Champlain of Local 150 (Los Angeles) still insists he is going to be top man in the ALL TIME HIGH Worked IA men. Tch . . . tch . . . so does W6MU Barney of Local 695 (Los Angeles SST), not to even mention Don, W4PKT of 507 (Macon, Ga.) and a couple of our VE Brothers like VE7ALW of Local 348 and that VE3. Many of you already know Jim Evans of Local 242 (Pittsburgh,

GOLDE SPOTLIGHT STOPS TRAFFIC!

Long-life GoldE spotlights brighten lobbies, displays, etc. U. L. Approved. Easiest to set up, most compact. Instant-lock tilt, heat-proof fresnel lens, porcelain socket, asbestos cord, removable cast base. Two models—500 watts, 1000 watts blower-cooled. Pipe clamps, color wheels, color frames available. See your dealer—or write to—

GOLDE MANUFACTURING CO.
4888 N. CLARK ST. • CHICAGO 30, ILL.



40% MORE LIGHT at 25% LESS COST!

With a Simple Installation of . . .

HUFF'S Carbon Cooler

. . . On Your Present Equipment

GET THE FACTS! See Your Dealer or Write for Folder Direct to . . .

HAL I. HUFF MANUFACTURING CO.
659 W. JEFFERSON BOULEVARD — LOS ANGELES 7, CALIFORNIA

CLAYTON BALL-BEARING EVEN TENSION TAKE-UPS

For all projectors and sound equipments

All take-ups wind film on 2, 4 and 5 inch hub reels.
Silent Chain Drives

THE CLAYTON REWINDER

For perfect rewinding on 2000-foot reels.

CLAYTON PRODUCTS CO.
31-45 Tibbett Avenue New York 63, N. Y.

Kans.), well he kicked through with a stack of new ones this month which puts him awfully close to that Gold Award, good luck Jim. Ed McMurray W7GXN of Local 180 (Everett, Wash.) is special secretary in charge of keeping us posted on the IA Brothers' calls and activities in his own Local, FB Ed.

We had a personal visit from BA Chet Lamont W7ALM Local 446 (Astoria, Ore.) the other day. Man oh man is he a BIG guy! His ten meter mobile rig really perks. We sez "Chet we will work you all the way home back to Oregon." Last words, my own rig blew up five minutes later—HI!

W7HIJ very active on the air. Don Johnson of Local 401 (Centralia, Wash.) is now W6LYD and is working in 409's jurisdiction, his mobile 75 and fixed station with (?) watts gives this chap W6BAA a run for his money.

Biggest cry this month is "What are the Prizes" for the boys who work the most IA men this year? Well, gang, the deal is simple and at this time I can only say that the prizes are shaping up to be pretty darn good ones. They will be announced in IP in an early issue. One advance tip we can pass on is this, work as many IA men as possible this year, send your totals in by December 15th and you may be surprised. There will be *several* dandy prizes which by popular demand will be radio ham equipment. But don't confuse them with our regular permanent "Worked 10 IA-IP" achievement awards or the "Worked 25" Gold Award.

The IA-IP Amateur Radio Achievement Award Box Score appears this month, so keep plugging and your call will be there too. This was vacation month for many of us and we have several logs to check that appear eligible for the awards but the Ed's deadline won't allow time to get them added to the Box Score until next issue.

We would like to mention, and with a lot of pride, that not one phoney log has been submitted to date.

The honor system is working FB and it just goes to prove that the boys are square shooters and a heck of a lot of fun to rag chew with, but can they gripe!

TV vs third dimensional pics is a topic on the air lately as to which would be better for theaters—well, what do you think? As for myself I'll swap ideas on a practical 3D projection method with any of you that are interested.

73

NEW IA-IP 'HAM' LISTINGS

W6HOV	Myron Theon	L. 728
W3BOP	Jim Belote	L. 668
W6FMG	Fred Kienle	L. 165

HEART OF THE PROJECTOR MECHANISM

(*Continued from page* 10)

fact that the pin-cross intermittent acts more quickly than the conventional geneva movement, there is no additional noise from the film loops. The truth of the matter is that the housing of enclosed mechanisms acts like a resonator, or sound-box, *when the mechanism door is open*. With the door closed to confine the inevitable variations in air-pressure caused by all sources of noise, the enclosed mechanism is as quiet as any other. It is interesting to note that the Ernemann German projector, an open mechanism, is amazingly quiet in operation.

The Pin-Cross Movement

Figure 5 shows the Power's cam-ring, and the pin-cross together with its shaft and intermittent sprocket. Note that the four pins of the pin-cross are so spaced that they fit snugly over the cam-ring which holds the cross motionless for the at-rest period of the intermittent. The cam-ring, however, revolves at a constant speed, making one revolution for each pulldown of the pin-cross and its sprocket-shaft.

The diamond-shaped interruption in the cam-ring holds the secret of the intermittent action. This diamond is of such shape that it gives the pin-cross a 90-degree twist as it passes by. The moment the twist is accomplished, the perfectly circular part of the ring again engages the four roller-pins, holding the cross stationary until the diamond comes around again to impart another quarter turn to the pin-cross and sprocket. (See Fig. 6).

The open grooves separating the diamond from the circular part of the ring provide an unobstructed path for the pins while the cross is turning. The entire movement is packed in grease.

The pins of the Power's 6B were roller-pins. These were far superior to the older non-revolving pins which wore flats and caused the picture to jiggle because of the resulting backlash between the pin-cross and the cam-ring. The roller-pin Power's movement was extremely steady and much easier to adjust and service than the conventional geneva movement.

The pin-cross movement provides rates of acceleration and deceleration of the film pulldown similar to those of the geneva movement—that is, the intermittent sprocket starts turning very slowly, gradually picking up velocity until the middle of the pulldown, when the velocity decreases until the sprocket very slowly comes to rest. The ratio of rest to pulldown times can be changed by simply changing the diameter of the cam-ring —the bigger the ring, the greater the ratio.

Figure 6 shows the pin-cross intermittent in action. Follow the stages of action by noting the positions assumed by the pin which is shown in black (for easy identification).

[TO BE CONTINUED]

How Many?

Was this copy dog-eared when it came to you? How many men read it ahead of you?

You would receive a clean, fresh copy *if* you had a personal subscription—and you wouldn't have to wait—you would be first to read it.

Use coupon below.

INTERNATIONAL PROJECTIONIST.
19 WEST 44 St., New York 36, N. Y.

Enter my subscription for
☐ 1 year—12 issues—$2.50
☐ 2 years—24 issues—$4.00

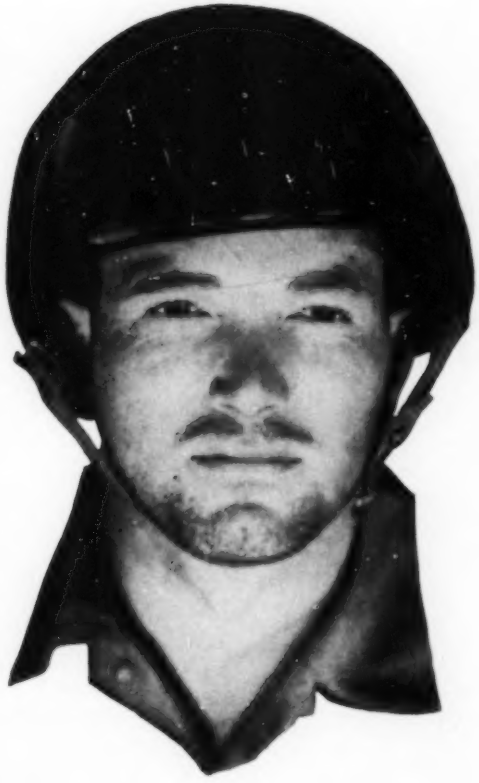
Foreign and Canada: Add 50c per year.

Name .....

Address .....

City ..... *State* .....

First Lieutenant Henry A. Commiskey, USMC Medal of Honor



ONE SEPTEMBER DAY, near Yongdungp'o, Korea, Lieutenant Commiskey's platoon was assaulting a vital position called Hill 85. Suddenly it hit a field of fire from a Red machine gun. The important attack stopped cold. Alone, *and armed with only a .45 calibre pistol*, Lieutenant Commiskey jumped to his feet, rushed the gun. He dispatched its five-man crew, then reloaded, and cleaned out another foxhole. Inspired by his daring, his platoon cleared and captured the hill.

Lieutenant Commiskey says:

"After all, only a limited number of Americans need serve in uniform. But, thank God there are millions *more* who are proving their devotion in another vitally important way. *People like you*, whose successful *50-billion-dollar investment* in U.S. Defense Bonds helps make America so strong no Commie can crack us from within! *That counts plenty!*

"Our bullets alone can't keep you and your family peacefully secure. But our bullets—*and your Bonds*—do!"

* * *

Now E Bonds earn more! 1) All Series E Bonds bought after May 1, 1952 average 3% interest, compounded semiannually! Interest now starts after 6 months and is higher in the early years. 2) *All maturing E Bonds* automatically go on earning *after maturity*—and at the new higher interest! Today, start investing in better-paying United States Series E Defense Bonds through the Payroll Savings Plan where you work!

Peace is for the strong! For peace and prosperity save with U.S. Defense Bonds!

The U.S. Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

THE MEN
BEHIND THE SHOW
...Know!

TORONTO MOTION PICTURE PROJECTIONISTS

AFFILIATED WITH
THE AMERICAN FEDERATION OF LABOR
TRADES AND LABOR CONGRESS OF CANADA
ONTARIO PROVINCIAL FEDERATION OF LABOR
TORONTO DISTRICT LABOR COUNCIL

OF THE INTERNATIONAL ALLIANCE THEATRICAL STAGE EMPLOYEES AND MOVING PICTURE MACHINE OPERATORS OF THE UNITED STATES AND CANADA

EXECUTIVE OFFICES
LABOR TEMPLE 167 CHURCH ST.
TORONTO 2

CHARTERED
NOVEMBER 17TH 1909

PHONE
EMPIRE 4 7604

May 6th, 1952.

International Projector Corp.,
Bloomsfield, N. J.,
U. S. A.

Gentlemen:-

Having had experience with different makes of motion picture projectors for thirty-three years in Famous Players Canadian Corporation theatres, I find that the Simplex X-L projectors and X-L sound heads which were installed in Shea's Theatre, Toronto, in October 1950, are the finest and most dependable ever made.

Since the time of installation to the present (working in a grind house), no replacement parts have been necessary.

The Spray-O-Matic lubrication insures the complete oiling of all working parts, thus eliminating the danger of wear, due to lack of oil. The large window on the gear side, enables the projectionist, at anytime, to observe the lubrication of the mechanism. Also, no oil can reach the film.

The framing aperture, along with the intermittent frame lock indicator, if properly used, guarantee no "out of frame" on changeovers.

Simplicity of gear train, roominess on both operating and non-operating sides of the mechanism, the twenty-four tooth sprockets, removable gate and film trap, have all contributed in making this projector the most outstanding product in the motion picture field.

For better projection and faithful reproduction, you cannot beat Simplex X-L projectors and X-L sound heads.

Yours sincerely,

James Sturgess

JS:db

J. STURGESS.
President, Local 173.
Motion Picture Projectionists.

Simplex